An Address

ENTITLED

SOME CLINICAL FACTS REGARDING MAMMARY CANCER.*

BY

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GENTLEMEN,—I am very sensible of the great honour you have done me by inviting me to address you, but now, when I begin the task, I feel that many of you may be disposed to regard the subject which I have chosen as a somewhat trite and threadbare theme. It is true that worldwide attention is being devoted at present to all considerations regarding cancer, in the hope of its real cause being discovered, as has already been done in comparatively recent years in the case of tuberculosis, osteomyelitis, and many other infective diseases. In this respect the whole medical world is on the tiptoe of expectation. The researches conducted, however, largely concern the pathological aspects of the subject, and you will agree with me when I say that, in the investigation of any disease, fundamental and important truth is best sought by considering the results of pathological study along with the facts of clinical observation. Neither department of work is self-sufficient; each tends more or less to explain, sometimes to confirm or to refute, inferences drawn from the other. While, therefore, pathologists are hard at work, it is equally incumbent upon those whose experience has been wide to make known in some way such facts of that experience as may appear important, even although they may not be new. What has impressed itself upon the observation of one who, during a long and busy professional life, has always had under his care patients suffering from mammary cancer may at all events, I hope, arouse some interest in the minds of those of you whose familiarity with that disease has been neither so long nor so constant.

The present clinical teaching in regard to cancer of the breast may, I think, be fairly summarized thus: It is a disease which probably invades the body from without, and is at first strictly of local character and of local consequence. If removed at a very early stage—that is, when the tumour is recent and still small—by an extensive operation definitely planned and carried out, a satisfactory cure may follow. Should no return of the disease occur within a period of a few years—say three to five—this result may be considered as fairly assured.

To the general tenor of such doctrine no one is now likely to offer any great objection; but, at the same time, as I shall endeavour to show, experience proves that many of these statements are contradicted, from time to time, by the progress and issue of individual cases. The disease is one of the most contradictory of all diseases. In almost all respects there is apt to be want of uniformity in the behaviour of different cases, even when they strongly resemble each other in the first instance. These statements I shall endeavour to substantiate, entirely by reference to clinical experience.

CASE I.

In the end of July, 1900, Mrs. E., a lady 67 years of age, was sent to consult me by Dr. Sinclair of Bo'ness in regard to a small, rounded and hard lump under the pectoral muscle at some distance below the right clavicle.

History and Operation.

Twenty-seven years previously the right breast had been removed, when she lived at Berwick-on-Tweed, by Dr. Philip Maclagan and Dr. Allan Jamieson, on account of a hard growth which it contained. It was evident from the size and situation of the scar that the axilla had not been interfered with. Dr. Allan Jamieson (now of Edinburgh) has informed me that he remembers this patient's case well, and although he cannot recall whether any histological examination of the tumour was made after its removal, he can say that no doubt existed in their minds at the time that they were dealing with a cancer. The present little growth lay, as I found when I removed it, under the pectoral muscle and much nearer to the scar than to the clavicle. It was very movable, but on incising the skin I found it was slightly attached to the under surface of the muscle, and so I removed a considerable portion of the muscle with it. The cellular tissue around it was quite loose, and I lifted out the growth with my fingers passed beneath it. I could feel no other nodule and no enlargement of axillary glands. Whether wisely or not, I contented myself with the removal of the growth, leaving the armpit still untouched. The growth was about the size of the distal phalanx of a finger, and had been growing since it was first noticed by the patient nine months before. It was very firm but not extremely hard.

Histological Examination of Tumour.

A histological examination of it was made by my friend Dr. A. R. Ferguson, at that time assistant to Professor Muir of our university, and now Professor of Pathology in the Government School of Medicine at Cairo, and he reported as follows:

"Lady, aged 67. Amputation of mamma twenty-seven years ago for cancer (?). The nodule of tumour tissue in the situation of mamma proves malignant. It is so richly cellular as to cause difficulty at first sight in diagnosis between carcinoma and sarcoma. I believe it, however, to be carcinomatous."

After-History.

On inquiry recently made, I find that Mrs. E. survived my operation about five and a half years. Under date December 9th, 1908, her son-in-law, with whom she resided, writes, regarding her illness and death: "As far as we know, the disease did not reappear. The nurse told us that Mrs. E. spoke about a lump somewhere, but the information was not sufficient for us to say anything about it. She died two years ago from congestion of the lungs." I have since also heard from the medical man who attended Mrs. E. in her last illness—in the neighbourhood of London where she latterly lived. He states that he "occasionally but rarely saw her chest, as she had the greatest objection to any examination of the scars." "I think," he adds, "I should have found the suspected cancer had it been present to any extent."

It is possible that the chest ailment which proved fatal in the old lady's case may have been due to cancer, but, in the absence of *post-mortem* examination, one must remain in doubt.

Now let us consider what lessons may be learned, what speculations may reasonably be entertained, from reflections upon such a case as this one. And, first, let us ask, Is this late recurrence of cancer, nearly thirty years after the removal of the primary tumour, a fresh development of the disease and quite unconnected with the original growth, or was the nodule which I removed in 1900 an offspring of that contained in the breast amputated at Berwick-on-Tweed in 1873? In other words, Was the recurrence a reinvasion or a residue? The very long period of absolutely good health and freedom from any new sign of the disease is apt to make any one, who has not had repeated experiences of late recurrence, at once conclude that the fresh outbreak is an independent and new invasion. What is more likely than that a woman who has been affected by this disease at 40 years of age, and has been, as we think, completely cured, should again develop it before she ends a long life? It would not surprise us if one of her sisters or daughters were to become affected with the disease, and why not herself, who has already proved her proneness in that direction? That we do occasionally meet with examples of cancer arising a second time in the same individual, and where its later has clearly no relation at all to its earlier manifestation, no case could better illustrate than the following:

CASE II.

On September 28th, 1896, Mrs. B., aged 44, was admitted under my care in the Western Infirmary of Glasgow with a hard tumour of the right breast, and a few days afterwards I removed the breast and the contents of the armpit. On histological examination the tumour was found to be a typical cancer of the scirrhous type. She went home in three weeks quite well.

On August 19th, 1908, she was readmitted, having enjoyed perfect health from the date of her last residence in hospital until about six months ago—that is, for eleven and a half years. At that time she began to experience much constipation and the necessity for great straining at stool. Shortly after this she also began to be troubled with frequent small stools containing blood and mucus, and appeared to be losing flesh. Digital examination of the rectum showed a hard prominent mass springing from the right side and ulcerated on its surface. The tumour was not markedly fixed and was situated at about the level of the cul-de-sac of the vagina. In my absence on holiday, Dr. George H. Edington, one of the assistant-surgeons of the hospital, excised the tumour, uniting by suture the cut and apparently healthy ends of the bowel. Microscopic examination showed that the growth was an adeno-carcinoma.

No one will doubt that this attack of cancer was an independent development, considering the irrelevancy of the rectum to the mamma, as regards the question of secondary infection. The determination of whether a

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late recurrence of mammary cancer after operative removal is to be regarded as directly connected with the first manifestation of the disease or not is a much more difficult matter when the site of the recurrence is in so closely co-related an organ, in this respect, as the other breast.

CASE III.

In January, 1896, I was asked to see Mrs. D., a lady then about 50 years of age and of very stout habit of body, with a tumour of the right breast, which there was no difficulty in recognizing as a carcinoma. There was evident but limited cancerous infection of the lower glands of the axilla. Examination revealed no sign of the disease elsewhere. She had been conscious of the presence of this lump in her breast for at least a year. On January 29th, 1896, I removed the breast and axillary contents. Microscopic examination showed that the tumour was a scirrhous cancer, and that the disease had already reached some of the lower axillary glands.

She remained perfectly well for ten years and eight months, when she discovered a precisely similar lump in the remaining breast. This I saw with Dr. Roxburgh of Pollokshields on October 9th, 1906, shortly after its discovery by the patient. On October 16th I removed the breast and axillary contents.

I saw this lady recently (December 24th, 1908). I found her in perfect health, and could not detect, on either side of the body, any indication of recurrence.

Such a case as this I am inclined to regard as an example of a second invasion of the disease. I am well aware—too well aware—how very often, and sometimes how very soon, the second breast becomes infected from the first by way of the lymphatics, but almost always with evidence of recurrence in other situations—in skin, subcutaneous space, bone or cervical glands. But here we had the disease appear in the second breast, there having been an absolute immunity of more than ten years after the operation on the first breast. From that date it is now more than thirteen years, and the lady still continues in perfect health, and with no sign of cancer in any part of the body. In these two women cancerous disease appeared on a second occasion of their lives, but in both of them in a part of the body which is a most usual and well-known site of its primary manifestation—namely, in the rectum and breast respectively. It is quite otherwise in the case of Mrs. E., to whom I first referred; and the fact that the tumour grew under the pectoral muscle is quite fatal to the supposition that it originated there, or, in other words, that it was a primary growth. It must therefore have been a residue, probably in some lymphatic vessel traversing the subpectoral fascia. There it lay for seven and twenty years, obsolete and inactive, but not incapable of recrudescence and rapid growth under conditions and circumstances of which we have no knowledge. We neither understand its long sleep nor its awakening. But I shall narrate another case which illustrates the same power of dormancy and revival in a microscopic piece of cancerous epithelium or some germ of cancer in a situation in which the occurrence of primary cancer would be, if I may be permitted so to express it, still more impossible.

CASE IV.

In 1894 I removed the left breast of Mrs. F., aged 40, a patient of Dr. Anderson of Glengarnock, on account of scirrhous cancer. This diagnosis was verified by microscopic examination. She was a farmer's wife, and remained in excellent health until 1903, performing all the duties of her household and of a large dairy. Early in that year she began to complain of rheumatic pain in the left hip and thigh. This became so disabling that she was compelled to take to bed in March and put herself under the care of her doctor. On getting out of bed one day the left femur fractured. She died four months afterwards.

At the time when the fracture occurred Dr. Anderson wrote to me as follows:

"I can discover no trace of cancer in the breast or elsewhere. The situation of the operation wound is marked by a soft and beautiful scar, and there is nothing in the way of disturbance of function anywhere to point suspicion."

Dr. Anderson has since further informed me that she died from gradual exhaustion, and that there never was any evidence which he could discover of further dissemination to lungs, liver, or bone, nor were there any nodules on the surface of the body.

In this case some fragment or germ of cancer—whether carried, as Handley believes, by lymphatic permeation or by the blood stream does not matter—obviously resided for nine years or thereby in the marrow of the femur and made no sign. Then, wakening up to activity, it increased, until by quick growth it gave rise to pressure, to destruction of the bone, and to spontaneous fracture. Unfortunately, neither in this case nor in that of Mrs. E. was there any *post-mortem* examination; but so far as clinical signs were concerned there was no evidence elsewhere of the disease.

A consideration of facts such as these leads us to recognize how unwise it is to regard patients who have been operated on for mammary cancer as permanently cured because they remain free of any indication of recurrence of the disease for three, four, or five years. Nor has the remote uncertainty of result, even when for many years the patient has remained in excellent health, been entirely removed by the more extensive operations which have obtained since, for instance, Mrs. E. was operated on. She had the breast, with some of its overlying skin, alone removed. Not even the axilla was interfered with, and yet she remained perfectly well for twenty-seven years. We are apt to forget that good results used to be occasionally obtained even by such a limited operative procedure, and the younger surgeons of to-day seem to believe that by no other than a very extensive operation is it ever possible to prevent an early recurrence. But I well remember, when a student of the old college in the High Street of Glasgow in the early Sixties, that Mr. Lister, no doubt keeping in view the experience of Mr. Syme, used to teach us that if the entire breast with the nipple and such overlying skin as seemed necessary were removed, freedom from the disease might, in certain cases, be long enjoyed and the patient live, perhaps, until some other disease put an end to life. Most other teachers were at that time, on the other hand, fond of declaring that every case of removal of the breast was necessarily followed by comparatively early recurrence and death, and they tried to dissuade patients from submitting to operation. In this connexion I was interested to read, in the BRITISH MEDICAL JOURNAL of April 15th, 1905, a letter by Dr. A. W. George, headed Death from Cancer Twenty-two Years after Primary Operation. The letter was as follows:

I have recently lost a patient whose case is, I think, worth placing on record. She was a maiden lady, one of a large family, in which a strong tendency to cancer seemed to exist. An elder sister, also unmarried, died from cancer of the uterus, while a younger sister, also single, died of this disease, primarily, of the stomach. At the age of 50 my patient had the right mamma removed by the late Mr. Durham; the axilla was untouched, and for seventeen years there was no recurrence. Five years ago a small nodule was discovered just below the scar; this was removed, and a microscopic examination showed it to be a true scirrhous cancer; a little more than a year later another nodule was removed. About the same time the inner end of the scar became gradually fixed to the chest wall by a deep growth too firmly fixed for removal; this slowly increased till it threatened to ulcerate. Somewhat later Roentgen rays were tried, and, for a time, seemed to check the rapidity of growth. Finally the skin ulcerated, the tumour sloughed, leaving a large malignant ulcer, which spread with a threatening of haemorrhage occasionally, the patient emaciating and succumbing to exhaustion at the age of 72. At no time was there any sign or symptom of a secondary new growth, nor was it even necessary to administer sedatives, as the disease was painless throughout.

Here, then, are at least two instances of patients surviving for prolonged periods after cancer of the breast was removed without even the axilla being touched—Dr. George's patient for twenty-two, and Mrs. E., whose case I have detailed, for thirty-three years. I accentuate this fact not to deprecate more extensive procedures—very far from it—but merely to offer a contradiction to the belief that no good result is possible without them. Like all other surgeons, I have now for a great number of years in every case cleared out the entire contents of the armpit and removed the breast, with more or less of overlying skin, in one continuous mass. These complete operations have undoubtedly increased the number of our so-called "cures"; and it may be hoped that the still more extensive operation of removing also the pectoral muscles, and perhaps the upper part of the anterior layer of the rectus sheath too, as recommended by Mr. Handley, with the view of preventing epigastric invasion, may result in even more gratifying progress. My own experience and, I should think, all other experience is still too recent to admit of any positive conclusion in this respect. But I have been long satisfied that whether we operate, as we think, early, or whether we operate obviously late in the disease, whether by limited or extensive removals, we must remain uncertain of our results. If we escape early we may still have late recurrence. Our patients may live for

many years and die of some other ailment, and these are the only cases to which we are entitled to apply the word "cure," unless, indeed, we may safely do so to those who live for more than thirty years after operation and remain well. I was much interested to read in the Epitome of Current Literature in the BRITISH MEDICAL JOURNAL, October 5th, 1907, similar views quoted from a paper by Bircher in the *Zentralblatt f. Chirurgie*, No. 26, 1907. He there states that the hopes that by modern methods a permanent cure of malignant disease might be effected have been realized only to a slight extent. Instances have been recorded of cases remaining well for ten, twenty, or even more years, but even in cases of this kind there can be no certainty. Statistics prove that retarded relapses occur, in spite of Volkmann's assurance of definite cure after freedom from recurrence for three years. They occur most frequently in the first decennial period after operation—more rarely in the second—and in the third they have been very seldom observed. Hirsch has reported a case in which the patient remained free from recurrence during twenty-five years; while Boeckel and Verneuil each records a case of like freedom during a period respectively of twenty-nine and thirty years. Bircher himself details an interesting case in which the disease appeared again in the scar twelve years and eight months after operation. This was removed, but five months later death took place from metastasis in the liver. He raises the question whether such an experience is an example of real recurrence or of fresh disease, and is of the opinion that such an attack cannot be explained by the view of a local disposition to cancerous disease, as the sudden outbreak of local recurrence and of metastasis must have been due to the influence of some factor favouring the proliferation of latent germs.

But if the character of the operation performed in respect of its extent is not always the explanation of a subsequent prolonged freedom from recurrence, the statement that early operation will ensure success is equally fallacious, and that for a good reason—namely, because it is impossible to know when we operate early and when we do not. Every modern surgeon operates as soon as possible after he has been consulted, and we all desire that patients should consult us at once, when they have found the slightest hardness or tumour in the breast. But clinical experience teaches clearly that the small size of a growth and its recent discovery by the patient do not necessarily mean that it is of recent origin. Nay, more, some cancers of the mamma shed themselves freely into the lymphatic system while still too small to be discovered even by the expert touch of the skilled surgeon, while not very seldom growths of considerable size, and which have been known to the patient for months, have not yet been disseminated as far as the axillary glands, as may be proved when these glands are afterwards removed and histologically examined. In this, as in so many other clinical respects, different examples of the disease constantly contradict one another.

CASE V.

Some years ago I was consulted by a lady from whose armpit a tumour had been removed by another surgeon nearly a year before. I was told it had been found on examination to be of a cancerous character. She was sent to me on account of a small hard tumour of the corresponding breast, which she had recently discovered. She was quite clear that at the date of the former operation nothing of the sort existed or, at least, could be felt. On removing the breast and the contents of the armpit, examination proved that carcinoma existed in both. What the ultimate result was as regards recurrence or otherwise I do not know, as I early lost sight of the patient.

CASE VI.

In the autumn of 1904 an elderly lady, who was then on a prolonged visit to Scotland, consulted me on account of symptoms due to a pretty extensive local recurrence of cancer after removal of the left mamma. The history of her case was as follows: Towards the end of 1901 a tumour of the lowest part of the armpit was removed by a distinguished London surgeon. It had been in existence for a few months. The surgeon made a careful examination of the mamma, but found nothing amiss with it, and contented himself with the removal of the recognizable disease. In October, 1903, a friend of mine in the south of England, who is a well-known and experienced operator, removed a recurrence from the neighbourhood of the scar. The patient soon returned with a second recurrence, and he advised removal not only of that but also of the breast, although on neither occasion did a careful search detect any tumour in it. To this, however, she would not then consent, and, perforce, he contented himself with the removal of the recurrent nodule of cancer. On March 17th, 1904, however, on her once more seeking his aid on account of return of the disease near its old site, he removed the breast and cleared out the axilla. A small tumour was contained in the breast. I saw her in the autumn of the same year, when there were present great oedema of the limb, scattered subcutaneous and cutaneous nodules in and around the scars, with hard masses in the infraclavicular and supraclavicular regions. The particulars I have given of her case were communicated to me by my friend, who had recommended her to consult me, distance preventing her from having recourse to himself. In a correspondence which subsequently passed between us, he wrote, "I cannot explain the condition in the old lady; but there remains the fact that neither —— nor I, later on, could feel any evident disease in the breast till recently I removed it."

CASE VII.

Quite lately (November 13th, 1908) a patient was admitted to my female ward in the Glasgow Western Infirmary, whose case illustrates the same clinical precedence in the observation of the secondary axillary cancer before the primary mammary tumour is large enough to be demonstrable. She was a woman of 56 years of age. About a year previously she noticed a swelling in the right armpit. She thought it was a "gathering," and some time afterwards the skin over it became discoloured and ultimately burst. It discharged no "matter," but bled very freely. Neither she nor her doctor discovered anything wrong with the breast. But about two months after this she observed a small but very hard "swelling" in the breast. It had since grown larger and become the seat of occasional shooting pain. On examination I found a very large, hard and fixed mass in the axilla, which had invaded the overlying skin, giving it a crumpled and puckered appearance. Three of these puckers or long creases in the skin ended in an ulcer attached to the glandular mass and covered with a dry scab. The tumour of the breast was very much smaller than that of the armpit. The supraclavicular glands also constituted a hard tumour.

These and other cases have convinced me that a mammary cancer may produce extensive involvement of the lymphatics even before it is of a size which renders it demonstrable. *A fortiori*, a tumour which is very small and has only recently attracted the patient's attention and caused her to seek advice must not be regarded as necessarily a very favourable one for operation. An early metastasis or local recurrence often follows operation in such a case, as I know by repeated experience, whereas sometimes a relatively large mammary tumour, whose existence may have been known to the patient for at least a year, may be followed after operation by a long immunity from recurrence, as in the case of Mrs. D. which I have narrated. This is only another instance of the contradictions which one observes in the clinical facts of different instances of the disease.

I was interested to find lately that another surgeon has been drawing attention to this same fact. In the *Transactions of the American Surgical Association*, vol. xxv, page 78, Halsted of Baltimore writes:

> I have twice seen extensive carcinomatous involvement of the axilla due to mammary cancer, which latter in neither instance became palpable or demonstrable for a considerable period after the axillary glands had attained conspicuous dimensions. In each case the axillary tumour had been removed, in one of them a year before and, in the other, perhaps two years prior to my first examination, which, though made in the most careful manner, failed to find the slightest evidence of cancer of either breast. In the course of a few months thereafter the mammary disease manifested itself in both patients.

Facts such as these prove that, in tumours of this character, small size and recent origin are by no means convertible terms. The little secondary cancerous tumour which I removed from the subpectoral space in the case of Mrs. E. was not bigger than the last phalanx of a little finger, and yet we know that twenty-seven years had passed before it attained to that size. How long a small primary tumour may have been in the making or how soon it may begin to disseminate itself, it is impossible for us to know. Every surgeon ought, therefore, to operate as soon after the discovery of a mammary tumour as he can, removing the whole contents of the armpit, and, if there be no serious reason to the contrary, one or both pectoral muscles as well. But it is equally his duty to remove the entire mamma when operating upon an axillary tumour which appears to be cancerous, or is subsequently proved to be cancerous by histological examination, even though he can discover no tumour in the breast.

I have narrated an instance of cancer of both breasts (Mrs. D.), the disease in the second occurring more than ten years after the removal of the first. The patient still continues well, two years and four months having passed since the second operation. I have expressed the hope, if not the definite opinion, that this is an example of a

primary tumour forming in the left breast, just as happened more than ten years previously in the right one. On one other occasion only have I met with any experience at all similar, and in that case the interval between the occurrence of the disease in the two breasts was a somewhat shorter one—namely, six years.

In all other cases in which I have seen both breasts affected, the appearance of the disease in the second breast has been only an episode in its progressive and continuous advance, even when that advance has been sometimes very slow. If no other evidences of dissemination are yet apparent, they immediately become so. Although I have in several cases removed the second breast under these circumstances, the procedure has always been followed by disappointment. The infection of the remaining breast, like that of the cervical glands, indicates a degree of generalized infection which seems to me to render further operative interference unnecessary and undesirable. And one is the more inclined to pursue this policy from the knowledge that a secondary dissemination of cancer in a breast is usually slower in growth and less likely to give rise to pain, ulceration, and other troubles than a primary tumour in the same situation. I shall shortly describe the disease as it occurred in two sisters, patients of Dr. Sloan of Catrine, since both cases illustrate several important points, and amongst others the secondary infection of the remaining breast.

CASES VIII AND IX.

In November, 1894, I excised the left breast of Miss I. S., aged 55, and cleared out the armpit. In January, 1896, I operated for recurrences in the neighbourhood of the scar; and again in October, 1898, and November, 1899. On November 7th, 1900, I removed the right breast and the contents of the right axilla, on account of disease in those parts. On April 3rd, 1901, another small nodule was found near the scar on the left side and cut out. On August 10th, 1901, I have it noted that the patient called to report herself, and on careful examination I could detect no sign of disease, locally or generally. Fourteen months afterwards, however, she developed signs of disease in the lumbar spine and elsewhere, suffered much pain, lost flesh and strength quickly, and died in January, 1903, thus surviving the first operation eight years and two months.

Her sister, Miss A. S., aged 62, was operated on (left breast) in May, 1904. Within a month or six weeks this was followed by a copious crop of cutaneous and subcutaneous nodules, then by disease of the remaining breast and a metastatic tumour of the liver, with deep jaundice. She survived the operation not much more than a year.

Here were two sisters, very like each other in personal appearance, affected in the later part of their unmarried lives with cancerous tumours of very similar character, so far as physical signs and microscopic examination showed, treated by the same operation, performed by the same surgeon, but with widely differing results. In both the disease proved fatal. In one it took more than eight years to accomplish the patient's destruction; in the other life was at an end in sixteen months.

In the first of these two cases we may believe—at all events it is pleasant to believe—that operation prolonged life; in the other, as all of us must have had occasion to feel in regard to such cases, it probably shortened it.

Up to the date of my operating upon the second sister, her tumour, the existence of which had been known to her for six months or so, made comparatively slow progress. Within a few weeks of my operating on it, there was a destructive dispersion of cancer with a rapidly fatal issue. I have too often in my life had the same sort of experience, and one cannot help, on such occasions, entertaining the feeling that the mere mechanical interference with the disease has caused its immediate and wide diffusion, and precipitated its fatal issue.

This sort of experience seems to bear a close analogy to what follows every now and again after operations undertaken for surgical tuberculous disease. It is one of several resemblances which clinically may be observed between the behaviour of mammary cancer and that of various forms of surgical infective disease. The violent stimulus and injury which is inflicted, for instance, upon a tuberculous ailment, whether of bone or of the soft parts, when it is operated upon, has been found pretty often to be quickly followed by dissemination of the tubercle to the lungs or the cerebral meninges, or even by a generalized miliary tuberculosis. Verneuil[1] and others have collected and published very many illustrations of this fact; and of such experiences I, like others, have had my share. Thus, upon the only occasion on which I ever ventured to apply the sharp spoon, and that with much gentleness, to the interior of a tuberculous kidney, after evacuating a large abscess by lumbar incision, the procedure was followed, after a few days of relief and quiet, by violent headache, high fever, vomiting, squinting, convulsion, and coma. Death occurred ten days or so after the operation from tuberculous meningitis. The patient was a nurse 35 years of age. I have seen the same mishap follow castration in a patient suffering from tuberculosis of a testicle. The disturbance of tuberculous joints, whether undertaken for diagnostic purposes or with a view to rectifying displacements, constitutes a real danger in this respect. A good many years ago I saw, on more than one occasion, with Dr. Barr Pollock, a boy of about 12 years of age, who suffered from hip-joint disease. He had been kept at rest by means of the long splint, with weight and pulley, for more than two years, and was making excellent progress. Another surgeon, who was consulted at this time, moved the joint freely under an anaesthetic for purposes of better diagnosis, giving his opinion afterwards against any operative interference, and recommending a continuance of the treatment hitherto used. Within a week the boy developed the signs of a meningitis, of which he died in less than a month. I once had a girl of 18 or 19 years of age under my care with a caries of part of the tarsus which had existed without dissemination or serious effect on the general health for eleven years. I scraped it with the sharp spoon, and this was soon followed by tuberculosis of the sternum and the apex of one lung.

I might easily adduce other examples of this form of surgical calamity, but I mention these with a view of attracting your attention to the resemblance they bear to those distressing and quick explosions of cancerous recurrence which now and then follow the removal of the mamma. The clinical fact is enough to make us, as far as possible, avoid all undue pressure upon and squeezing of the tumour, whether during diagnostic manipulation or during the operation for its removal.

The other sister whose case I have referred to lived for more than eight years after operation, although she suffered throughout from the disease. The reason of this clearly was that, whereas in the rapidly fatal case an early metastasis to the liver occurred and precipitated death, in her sister the disease remained external throughout.

Here again we have a striking resemblance to the behaviour of certain cases of infective diseases. It would seem *a priori* almost incredible that a young child should develop in a few months dozens of tuberculous lesions on the surface of the body, thus proving the free circulation and movement of the tubercle bacillus, and yet escape all infection of peritoneum, meninges, pleura, lungs, kidneys, or other internal organs to which childhood is so very prone. And yet such an occurrence is almost a matter of everyday experience.

I lately treated, along with my friend Dr. Ferguson of Paisley, a child, whose case is a striking, but by no means rare, example of that to which I refer. Its only unusual feature, perhaps, is that the patient was the child of wealthy parents, such cases being most often seen amongst the poor. She was born in May, 1900, and was a singularly plump and beautiful baby. In February, 1901, a livid nodule formed in the skin of the left cheek. This ultimately softened and was scraped, the resulting sore being about the size of a shilling. In May, 1901, two similar nodules appeared in the same cheek, and one in the right cheek. When she was 15 months old the edge of the malar bone near the outer corner of the left orbit became infected and gave rise to an abscess. Two months later a similar lesion declared itself on a similar spot on the other side of the face. Small sequestra ultimately separated from these situations. A month after this an abscess connected with the lower maxilla declared itself and was opened. Ultimately a considerable sequestrum separated. By June, 1902, she had developed fourteen other lesions—in metacarpus, proximal phalanges of the fingers, metatarsus, proximal phalanx of one great toe, and also in cervical glands. Many small subcutaneous cold abscesses formed after December, 1901, and one of considerable size showed itself in the left loin. This was treated, with most satisfactory results, by emptying it and injecting iodoform emulsion in glycerine. Most of the lesions of bone and the soft parts were treated with the sharp spoon, while sequestra were removed when loose, and one or two cervical glands were excised, in operations performed from time to time. The last of these was performed in June, 1903. In the beginning of 1904 every lesion was healed. During her long illness the child emaciated and looked ill, being fretful and peevish. The lesions in the external parts of the body numbered twenty-eight

in all. Never once, however, did she exhibit the slightest sign of disease in abdomen, chest, or head. Now she is a vigorous, healthy-looking child, nearly nine years of age, full of life and spirit, and not so much disfigured as might have been expected.

I can well remember cases of pyaemia in the Glasgow Royal Infirmary, in the dark days of surgery more than forty years ago, in which multiple abscesses, in the same way, remained confined entirely to the external parts, and in such cases—and they were the happy few—recovery often occurred. The surgeons of that day were not unfamiliar with them, and they were referred to as cases of "external pyaemia." In his *Illustrations of Clinical Surgery*, vol. i, p. 229, Sir Jonathan Hutchinson, referring to this matter, remarks:

> It may be that the term "external pyaemia" is founded only on a few coincidences, but there is no doubt that amongst surgeons the opinion prevails that when with pyaemic symptoms abscesses develop in the cellular tissue, the case has about it an additional amount of hope.

Of course no case of disseminated mammary cancer, even when the lesions continue entirely external, can be expected to undergo cure, as may often happen with tubercle and pyaemia; but some of them live for a long period of years—some have been recorded who survived for twenty years—and in the case of others even disappearance and cure of individual cancerous lesions, quite apart from any treatment, have been observed. Of this fact of long survival, when for some inexplicable reason dissemination does not reach internal organs, I could adduce a good many examples. I shall mention only two.

CASE X.

One pursued its course from first to last uninterrupted by any operation. This was the case of a lady whom I saw many years ago with the late Dr. Paterson of Bridge of Allan. Several of her near relatives had been operated on for the same disease, and in all of them somewhat early recurrence and death had taken place. She therefore stoutly refused the suggestion of operation. I saw her again about thirteen years afterwards in her house in Glasgow, with her medical attendant, on account of a very severe haemorrhage from a spot in a large cancerous ulcer, which occupied the situation of the breast. All over that side of the chest there were scattered nodules of cancer. The upper limb on the affected side was greatly distended with oedema, and masses of cancer were obvious in the axilla and above the clavicle. Yet, though wasted and cachectic in appearance, this lady had not been confined to bed, did not suffer great pain, and in many ways had continued to enjoy her life. She did not die for some considerable time after my visit, being well over 70 years of age at the time of her death. She never resorted to the habitual use of any form of opiate.

The following case illustrates quite as strikingly the external character of the disease and the consequent comparatively long duration of life.

CASE XI.

In December, 1901, I was consulted regarding the case of Miss D., a patient of Dr. Arthur Mechan. She was then about 40 years of age, and, I was informed, had been operated on in 1898, two and a half years previously, on account of carcinoma of the breast; and now some nodules of the disease had appeared in the scar. These I excised, and repeated the procedure six months afterwards on account of a fresh crop of recurrent nodules. Before long others began to appear in and around the scar, while there were hard cancerous glands at the root of the neck and unmistakable signs of the disease in a dorsal vertebra, with slight angular curvature and pretty severe pain encircling the chest. Nevertheless, she continued going about daily till about a year ago, and appeared to enjoy life in spite of her disease, which continued to progress. By aid of the constant use of morphine, she accomplished the daily necessary household shopping, made calls on her friends, occasionally went out to dinner, and often attended concerts. At Christmas, 1907, she was present at a tea party given one afternoon, in my female ward in the Western Infirmary, by some ladies, to the patients, and evidently enjoyed the novel experience; but for a year past she had been much weaker. Lately, when she was getting out of bed one day, one femur broke. Her weakness then quickly increased, and she sank and died, having survived the amputation of her breast about eleven years. At no time was there any indication of disease in thorax or abdomen.

Mr. Herbert Snow has remarked that "the 'favourable conditions' for long life in cancerous patients mean the induction of the most passive and vegetable existence that it is possible to secure, the aim being to procure and to sustain in such the utmost tranquillity of body and mind," and advises the free use of morphine. It is worthy of remark that this lady took morphine very freely throughout her long illness, using latterly as much as 1½ grains of that drug by hypodermic injection every twenty-four hours.

The late recrudescence of the disease in a patient who has, for many years, survived an operation for cancer of the breast, and in regard to whom our anxiety has long ago been lulled to rest, instances of which I have already cited, may be regarded as illustrating another analogy or resemblance between the behaviour of certain cases of cancerous and of some other infective diseases. Paget drew attention, in a well-known essay, to the frequency with which lesions of tuberculous disease and of osteomyelitis, long ago healed, are apt to relapse and once more waken into activity. This essay was entitled Residual Abscess, and in it he wrote of inflammations and abscesses occurring in connexion with the residues of former attacks of disease. "Under the name 'residual abscess' I would include," he wrote, "all abscesses found in and about the residues of former inflammations. Most of them are found where pus, produced long previously, has been wholly or in part retained and become dry or in some form 'obsolete.' But some of them, it is probable, are formed in the thickenings, adhesions, or other lowly-formed products of inflammation long past."[2] This essay was written in pre-bacteriological days; and, in the light of more recent knowledge, the clinical fact must be explained rather by the reawakened activity of latent germs in the part than by any influence of the residual products of the former inflammations which, by their action, those germs originally furnished. Every surgeon has had cause to observe cases of relapse in after-life both of tuberculosis and osteomyelitis, the primary manifestations of which may have taken place in early infancy.

I conversed only a few weeks ago with a gentleman now in his 69th year, who suffered from hip-joint disease when 5 years of age. He was ill and confined to bed for many years, and all his boyhood was passed in great pain. His hip became dislocated and a sinus continued to discharge till he was about 15 years of age. From that time, however, he continued fairly well, attending school and afterwards entering upon a business life. At 31 years of age he was laid up for a considerable time, an abscess forming and bursting at the old cicatrix. In six months it had healed. He remained in good health and actively engaged in business until he was 52, when he came under my care with a large abscess of the hip, which did not permanently close for more than three years. Once more, since then, he has enjoyed excellent health.

The same tendency to recrudescence is observed in staphylococcic infection of bone years after what seems a satisfactory and absolute cure.

A well-known citizen of Glasgow recently died, being over 60 years of age, who passed through a prolonged and dangerous illness under my care when he was about 30. When 7 years of age he suffered from osteomyelitis, with extensive necrosis of one femur, but, after a long illness, recovered. When I attended him he had great pain, swelling, and tenderness in the same part, with very high fever and delirium. Ultimately I evacuated an abscess which contained nearly a pint of pus. After recovery he once more led a strenuous life, building up an important and very extensive business. In addition, he was a member of Parliament for several years and the author of more than one literary venture. These facts show that he was able to lead an active life. Nevertheless, his old disease again laid him aside on two different occasions for a week or two with recurrent inflammations, without, however, any abscess formation. It had no share in bringing about his death.

Perhaps no more striking example of a recrudescence of latent organisms can be cited than that which is occasionally observed when a periostitis or osteomyelitis has occurred, say of a tibia, during convalescence from an attack of typhoid fever, and has once more subsided. Several years, it may be, after such a bone ailment (cases have been recorded where ten years have elapsed) inflammation may once more occur, and may end in abscess formation. On cultivation the pus is found to yield a pure culture of the typhoid bacillus. I have met with this experience both in connexion with bone and with the gall bladder.

One cannot help recognizing in such occurrences at least a superficial resemblance to those cases of late recurrence of cancer where residual fragments—or may it be resting germs?—of cancer wake up to activity long after apparently assured cure, bring about fresh proliferation and dissemination, and so accomplish the postponed death of the patient.

Our most favourable results, then, if my experience has not been exceptional, are not to be regarded as due necessarily and always to the form and extent of our operation or to the date of our interference relatively to the size of the tumour. They seem due rather to the

essential character of the individual tumour and the degree of invasion of the lymphatic system of the part in each individual case. If the upper axilla be involved as well as the lower, the prognosis is the more doubtful; if there be obvious infection of the skin, especially in the form of detached separate nodules near the seat of the disease, the prospect of long immunity from recurrence is very slight, however large an area of skin be sacrificed, while if the disease is apparent in glands above the clavicle, I always now decline to operate. Still the extent of the operation is, undoubtedly, a certain factor in our results. I have mentioned the fact that long-continued good health and apparently permanent cure sometimes, in former days, followed removal of the breast alone; but the much more frequent experience of such encouraging results after the more extensive procedure of also clearing out the armpit has been very marked indeed. While preparing this paper I have either personally seen, or communicated with the medical attendants of, ten patients who remain quite well after operations performed seven years ago and upwards for mammary cancer, verified after removal by microscopic examination. The list only includes one hospital patient, as such patients, for the most part, quickly disappear from one's view, and I have made no search at all amongst former patients, whether private or hospital. These ten to whom I refer chance to have remained within the area of my own knowledge and observation. The periods of time which have elapsed since operation in these cases are respectively thirteen years, twelve years and four months, eleven years and eight months, ten years and eight months, ten years and six months, nine years and one month, nine years, seven years and ten months, seven years and three months, and seven years. In all of these cases the contents of the axilla were removed, but in none were the pectoral muscles interfered with. I believe it would, at any time, have been impossible for a surgeon of thirty or forty years ago, who removed the mammary gland alone, to have made a statement similar to this. Nowadays there are large numbers of surgeons all over the world whose experience of results is of exactly the same character; and this, no one will dispute, is due to the more extended nature of the operation. Whether or not the routine practice of removing the pectoral muscles will mark a corresponding advance is doubtful; but I think it should be followed, in the absence of anything to contra-indicate it, since we must do everything we can to be in advance with our operation of any existing dissemination of the disease; and, in any case, the removal of these muscles makes the clearing out of the axilla much more easy and satisfactory, while their absence is hardly at all disabling as regards the future usefulness of a woman's arm.

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A Lecture
ON
THE NATURAL CURE OF CANCER.*

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ON two previous occasions, when I had the honour of occupying this chair, I presented a view of the mode of dissemination of cancer which I had worked out in the laboratories of the Middlesex Hospital. Under the name of the permeation theory, this view met with wide acceptance. In America it has recently found distinguished advocates in Professor W. S. Halsted, Dr. W. B. Coley, and Professor Rodman, and it has been confirmed in the laboratories where it originated by the work of Dr. Victor Bonney and that of Mr. Cecil Rowntree.

My reasons for mentioning these facts are two in number: First, that, although the permeation theory has met with wide intellectual acceptance, its intensely practical bearing on the surgery of every variety of cancer has not yet been generally realized. In the second place, much of what I have to say to-day is a corollary of the permeation view of dissemination, and it is necessary to show that I have warrant for assuming its truth.†

Since the severance of my official connexion with the Cancer Research Laboratories of the Middlesex Hospital upon my appointment to the surgical staff of the hospital in 1906, my researches have been extended to stomach cancer, with the aid of a grant from the Imperial Cancer Research Fund. On a future occasion I hope to have the privilege of bringing forward my results in regard to gastric carcinoma.

In the literature of carcinoma there are embedded a number of scattered observations, usually referring to single cases, which show that under certain circumstances the disappearance of cancerous masses of macroscopic size may occur spontaneously. In a few cases all clinical evidence of the disease has in this way disappeared, and a natural cure seems to have been brought about.

Occurring in what is usually regarded as the type of a steadily progressive malady pursuing its undeviating course to a fatal event, these facts have appeared strange and anomalous to most of the authors who have recorded them. Their possible significance in respect to the cure of cancer, a significance which it would be difficult to overestimate, has been referred to by Mr. Pearce Gould, who, in a lecture on "Cases Illustrating Repair in Cancer of the Breast,"[1] pointed out that "we are justified in speaking of repair in cancer, even in its advanced stages," a conclusion which "justifies—nay, compels—a belief in the possibility of the cure of cancer, and gives us an indication of the direction in which a cure is to be sought."

In this lecture I propose to consider, as fully as time and a difficult and elusive subject will allow, the facts which bear on the natural cure of cancer.

I hope to show that, as I have stated elsewhere, "the progress of a cancer is normally accompanied by retrogressive or curative processes"[2]; that the recorded cases of natural repair in cancer, far from being anomalous and exceptional, merely illustrate more strikingly than usual the natural laws which govern every case of the disease. The order of Nature admits of no real anomalies, and is often best brought to light by the close study of apparent exceptions.

AN UNRECOGNIZED LAW OF CANCEROUS GROWTH.

The unrecognized law of cancerous growth which I wish to establish may be stated as follows:

Every aggregation of carcinoma cells has a definite life-cycle, and, after increasing in size for a varying period and at a varying rate, tends spontaneously to undergo degenerative and fibrotic changes. These changes extend from the centre of the mass centrifugally to its periphery, lead to its shrinkage, and terminate in the replacement of the aggregation of cancer cells by a fibrous scar.

In other words, the natural history of a cancer is one of centrifugal growth followed by centrifugal death. It is obvious that the postulate thus stated cannot be completely proved, if only because at the time death occurs the life-cycle of many—and in some cases of all—of the deposits will be incomplete. The most I can hope to do is to produce a certain amount of positive evidence for my proposition, to meet certain possible objections, and, above all, to show that its acceptance drills into order a ragged regiment of apparently anomalous facts, provides a trenchant weapon of criticism for deciding the value of cancer cures, and offers an explanation of the vogue which almost any cancer remedy may for a brief space attain.

To avoid misconception it will be well at the outset to state that the natural cure in cancer is a local and not a constitutional process, and that as a rule it closely follows up, without overtaking, the centrifugal spread of permeation, and so fails to arrest the march of the disease. It is certain that in some cases its vigour is sufficient to strangle the growth in an early stage, or to reduce it to impotence for a long term of years, but as a rule the natural processes of cure go on contemporaneously with

* Delivered b fore the Royal College of Surgeons of England.

† The permeation theory is beginning to gain adherents on the Continent. At the Congress of the International Society of Surgery, held at Brussels in September, 1908, Professor A. Depage, in opening the discussion on breast cancer, said; "Les recherches récentes de Handley et sa théorie de perméation nous ouvrent en ce moment des horizons nouveaux."

the active advance of the disease in other parts of the body further removed from the primary focus.

Apparently Complete Spontaneous Cure.

Velpeau believed that the spontaneous cure of cancer never occurs, and although since his time several cases o the kind have been recorded, the disappearance of a cance which has clinically reached its full development has neve yet been absolutely demonstrated by a complete necrops with a negative macroscopic and microscopic examination of the tissues for cancer. A few examples may be given.

CASE I.

The best known of these cases is that of Mr. Pearce Gould.[3] There is no need to repeat its details fully. In 1890 the patient had her left breast removed for a "typical scirrhus," microscopically diagnosed. In 1895 she was emaciated and dyspnoeic, with numerous secondary skin nodules, large axillary and supraclavicular glands on both sides, and a cancerous fracture of the neck of the left femur. Between March and November, 1896, the skin nodules shrank, and were converted into keloid scars, the glands disappeared, the fracture united, and all evidence of growth had disappeared. By 1899 all the scars had become soft and supple, and the general condition had further improved. Unfortunately the patient has not reported herself since about 1906.

CASE II.

Dr. G. Mackay[4] records the case of a woman of 37, who had her breast removed for a microscopically-diagnosed scirrhus. Recurrence took place a year later, locally in the opposite breast, and extensively in the lymphatic glands. Double haemorrhagic pleurisy, with dysphagia and severe dyspnoea, next came on. From this point improvement began; the pleuritic effusion was absorbed, and all the secondary growths disappeared. Dates, however, and subsequent history are not given.

CASE III.

A woman, aged 56, now in the cancer wards of the Middlesex Hospital, under the care of Mr. Bland-Sutton, had a portion of the right breast removed for cancer at Chichester in 1894. Operations for recurrence in the breast and axilla were performed in 1896 and in 1903. The nipple still remains, and, indeed, most of the breast appears to be intact. That the disease was not entirely cured by the operation was shown by the development of a brawny arm in 1905, two years after the last operation. No other evidence of cancer remains, and it seems fair to consider this case as much one of natural as of operative cure.*

Atrophic Scirrhus.

The apparently complete disappearance of a cancer in the acme of its career of dissemination is one of the rarest events in medicine, but cases are by no means exceptional in which from the beginning the natural processes of cure oppose a stout resistance to the growth. Such appears to be the true nature of cases of atrophic scirrhus. These cases include the best examples of the complete natural cure of cancer. In the most marked form of atrophic scirrhus a puckered scar, to which the skin may become attached, slowly forms in the breast. The whole breast becomes somewhat shrunken and the nipple indrawn, but no definite tumour makes its appearance. The disease in this form is usually painless, and the patient's attention is only attracted by local puckering and adhesion of the skin. Two such cases have recently come under my observation. In such cases the patient may die of some other disease, or, after many years, local ulceration or dissemination may terminate the case. It is not improbable that certain chronic ulcers of the stomach, accompanied by great fibroid thickening, are really extinct carcinomata. For every cancer which reaches its full clinical development, even as an atrophic scirrhus, it may be that a hundred are strangled in the process of birth and while still in the microscopic stage. Cases of typical atrophic scirrhus pass by imperceptible gradations into what is known as "ordinary scirrhus."

I recently had the opportunity of seeing, with Dr. Lockhart Stephens, of Emsworth, a woman 80 years of age, still hale and vigorous, who was operated upon twenty-eight years ago by Dr. Snow for cancer of the breast, and at intervals since for local recurrence. The growth was in the left breast and a considerable portion of the gland still remains. No palpable growth can be felt anywhere. She suffers, however, at intervals from swelling and fullness of the supraclavicular triangles, probably due to difficulties in the circulation of lymph produced by partial obliteration of the lymphatic vessels. She also complains greatly of pains in the head, and of rheumatic pains elsewhere. It appears certain that the process of permeation is still smouldering along her lymphatic vessels, for at intervals transient nodules appear in the scalp, and the subcutaneous tissues of the forehead are rough and granular to palpation, an indication of the fibrosis of the permeated lymphatics.

Without wishing to detract from the credit which is due to the surgeon, I think this case should be regarded as one of natural rather than of operative cure. More accurately it might be regarded as a kind of stalemate, in which the forces of the cancerous growth and the reparative processes are balanced with the utmost nicety, for the growth does not appear to be completely arrested even yet.

Leaving these cases of clinically more or less complete cure, we may now consider for a moment the records of partial or local cure, as evidenced by the disappearance of macroscopic deposits of cancer.

Subcutaneous Nodules.

The earliest observer of the spontaneous disappearance of skin nodules appears to have been Mr. Howard, the originator of the Middlesex Hospital cancer wards. In his *Notes and Observations*, published in 1792, he says, speaking of a case of bilateral breast cancer:

> The tumours commence as small, reddish, slightly-elevated, shot-like indurations of the skin, which enlarge until they attain the size of a pea, when they ulcerate, and afterwards not infrequently heal. . . . The mammae were formerly voluminous, but have dwindled down until they are perfectly flat over the chest.

In 1867 Mr. Charles Moore noted at the Middlesex Hospital that subcutaneous nodules can be destroyed by injecting them with glacial acetic acid, but that some weeks later they may reappear. In recent years the spontaneous disappearance of subcutaneous nodules has been recorded by observers too numerous to mention by name.

Even before the disappearance of skin nodules, and while they form little tumours still definitely raised above the surface, I find that the nodules may consist entirely of fibrous tissue, from which all trace of cancerous epithelium has vanished. This stage of fibrosis doubtless indicates approaching disappearance. Skin nodules frequently ulcerate in the later stages of the disease, and the ulcer may heal, as sometimes happens to an ulcerated primary growth.

Epitheliation of Cancerous Ulcers.

Mr. Pearce Gould in 1900 recorded two cases of partial healing of a cancerous ulcer by the spread of normal epithelium over it. In a third case a large ulcer, due to malignant disease of the right breast, completely healed up. The patient died a month after the process was complete, with deposits in the lungs and liver. It is to be noted that the cicatrization of cancerous ulcers does not seem to delay the fatal event of the case.

Union of Cancerous Fractures.

This is not a very rare, though doubtless an exceptional, event. Several cases occur in the records of the Middlesex Hospital for the last thirty years. In one case fractures of both humeri, of the left clavicle and the left femur, had united, while ununited fractures of three metacarpal bones were present.

The Shrinkage of Spinal Metastases.

Professor Osler[5] has recorded two cases of spontaneous relief from paraplegia due to the pressure of spinal metastases.

The Shrinkage of Cancerous Lymphatic Glands.

This important question has never yet been fully studied, but there is reason to believe that the successful cancerous invasion of a lymphatic gland is frequently preceded by fruitless attempts at invasion, and that lymphatic glands possess considerable power of destroying cancerous epithelium. I have examined sections of enlarged glands in connexion with a primary growth of the uterus which consisted almost entirely of fibrous tissue. In a case of breast cancer in a late stage I have observed an intermittent enlargement of the axillary glands on the side opposite to the growth. On some

* Note, October, 1908: This patient has since died with internal secondary growths, the probable ultimate fate of most cases of the kind under consideration.

occasions these glands were as large as almonds, while on other intervening occasions they were quite impalpable.

Dr. Bonney has lately studied the precarcinomatous changes which occur in lymphatic glands. He finds that enlargement of the gland precedes the access to it of carcinomatous epithelium. Microscopically the enlarged gland shows abnormally large germinal areas, with a great increase in the number of lymphocytes present. Plasma cells appear in large quantities in the stroma and capsule of the gland. The exact significance of these important observations is at present doubtful.

So far I have brought before you the vestiges of repair in carcinoma as traced in the literature of the subject, but I have produced no evidence to show that this repair is a normal event. This gap in the evidence must now be filled in so far as it is possible to do so.

A.—The Microscopic Evidence for the Constancy of Repair in Carcinoma.

Perilymphatic Fibrosis.

My investigations on breast cancer have shown that the permeation of a lymphatic is normally followed by a curative process of fibrosis. The cancer cells, which at first fill the lymphatic without distending it, by their continued proliferation finally burst the tube of endothelium within which they are enclosed. Around the split lymphatic some extravasation of blood usually takes place, and a dense aggregation of lymphocytes appears. Soon the lymphocytes are replaced by young fibrous tissue, which forms an adventitious sheath for the cylinder of cancer cells set free from the burst lymphatic. This newly-formed fibrous tissue contracts upon the degenerate cancer cells, and they ultimately entirely disappear. The original lymphatic is now represented by a solid thread of fibrous tissue, and the process of natural cure is locally complete.

Figs. 3 and 4 represent this change diagrammatically. Inside the microscopic growing edge G G G the lymphatic plexus is represented merely by a network of fibrous threads.

Perilymphatic Fibrosis in Stomach Cancer.

In stomach cancer the difficulty of following out the various stages of permeation is enormously increased by the unstable nature of the cancer cells. The cells of a gastric carcinoma exhibit the utmost readiness to undergo complete mucoid degeneration. This difficulty, however, has in the end proved to be an advantage. In breast cancer it was impossible, except by inference, to trace the process of perilymphatic fibrosis beyond the stage in which cancer cells clearly recognizable as such are still present in the new-formed fibrous tissue. In stomach cancer, however, I have succeeded in following up the process beyond the stage of the disappearance of recognizable cancer cells. Fortunately there exists a stain —mucicarmine—which dyes mucin a bright red, while it has little or no affinity for any other tissue or material. The use of this stain promises to be of the greatest possible use in the investigation of gastric cancer. So far I have only used the stain for investigating the spread of stomach cancer in the deep fascial lymphatic plexus of the abdomen, to which the growth often obtains access near the navel. The drawing which I show you represents a section of one of the minute areas of young fibrous tissue, evidently of new formation, present upon the deep fascia near the umbilicus. My belief that this and similar areas represented the complete fibrosis of permeated lymphatics would have remained an unconvincing speculation. But mucicarmine brought out minute points of granular débris, stained a bright red, in the centre of the young fibrous tissue, and guessing was thus replaced by the strongest evidence. For it is certain that none of the normal structures of the deep fascia contain sufficient mucus to give a reaction with mucicarmine.

Thus, although in stomach cancer it has hitherto proved impossible to demonstrate all the stages of permeation in a nicely-graded series, such as I have shown in breast cancer, yet a gap in the evidence has been filled. The latest stage of perilymphatic fibrosis, in which cellular destruction is complete, remains no longer a mere inference, but can be shown actually to occur. The vanished cells of stomach cancer, unlike those of breast cancer, leave for a time a characteristic residue which enables their former presence to be shown by means of a definite micro-chemical reaction.

In this process of perilymphatic fibrosis there exists therefore a definite and unmistakable instance of the natural cure of cancer by purely local processes which form a normal part of the pathology of the disease.

The destruction of cancerous emboli in the arterioles of the lungs, first demonstrated by M. B. Schmidt, is another instance of the local cure of cancer on a microscopic scale, but time will not allow me to enter into the details of the process.

B.—The Macroscopic Evidence for the Constancy of Repair in Carcinoma.

So far the evidence brought forward to show the constancy of repair in carcinoma has been of a microscopic character. But a recent study of repair on its macroscopic side has driven me to the conclusion that reparative processes are just as active and normal in the primary growth and in its satellite nodules on a macroscopic scale, as on a microscopic scale in the blood and lymph vessels. In the large aggregations of cancer cells the process of repair is later in beginning, and longer in its completion. The patient may die while it is still in its earliest stage, so that in some cases it may be difficult or impossible to demonstrate any sign of it. Its primary cause is a degeneration of the cancer cells, the result of a breakdown in their nutrition.

In carcinomata whose cells possess a high degree of proliferative power, the life of the patient is destroyed while the cancer is still in the early stages of its life-cycle. At the other end of the scale, in carcinomata of low proliferative power, the patient may possibly survive the carcinoma. Between these two extremes all gradations are met with. Expressed in clinical language these gradations are known as:

1. Medullary carcinoma.
2. Scirrhus.
3. Atrophic scirrhus.

Medullary carcinoma is a carcinoma of high proliferative power, occurring in young subjects, whose connective tissues are vigorous and highly cellular. A large mass of growth is rapidly produced, and the patient dies in the early or evolutionary stage of the life-cycle of the carcinoma.

The typical scirrhus is a carcinoma of moderate proliferative power. The patient dies in the involutionary stage of the carcinoma, but before its life-cycle is complete.

Atrophic scirrhus is a carcinoma of low proliferative power, occurring in old people, whose connective tissue is poor in cells. In its perfect form the life-cycle of the carcinoma is completed during the life of the patient.

Ulceration of the Primary Growth.

Almost invariably a primary carcinoma undergoes ulceration in the later stages of the disease. The ulceration begins at the centre of the growth and extends centrifugally into its peripheral portion. These facts are among the very elements of cancer pathology, and perhaps for that very reason no explanation of them has been attempted. From my point of view the constant occurrence of ulceration is of deep significance as showing that the death of the oldest portion of the primary growth is a normal event, and that the duration of any local aggregation of cancer cells is a strictly finite one.

Macroscopic Repair in Cancer a Centrifugal Process.

We have already seen that perilymphatic fibrosis closely follows up the centrifugal spread of permeation—that is to say, it is itself a centrifugal process—starting at the infiltrative margin of the primary growth, and extending in the lymphatic plexuses after the fashion of a ripple. The destruction and repair of large aggregations of cancer cells obeys a similar centrifugal law. Both in the primary growth and in each of its satellite nodules degeneration and repair commence at the centre of the mass and spread to its circumference.

Centrifugal Repair in a Secondary Nodule.

In certain of the secondary nodules of carcinoma no intranodular stroma makes its appearance, and the nodules in consequence only attain a very limited size. Such nodules afford the best material for the study of

repair in secondary deposits. The first indication of repair is that the central cells begin to exhibit degenerative changes. The cell body swells and becomes vacuolated. The nuclei begin to shrivel and lose their power of taking up stains. The whole centre of the nodule may undergo liquefaction. The peripheral cells of the nodule, those which abut directly upon the connective-tissue cells, retain the appearance of full vitality.

The next change is the appearance in the centre of the nodule, among the degenerate cancer cells, of a lymphocytic infiltration, which, however, is not a constant event. Still later, when degeneration has extended to the circumference of the nodule, the lymphocytes give place to a mass of connective-tissue cells, vascularized by new capillaries. Umbilication of the secondary nodule now occurs, owing to the contraction of this central mass of fibrous tissue.

The nodule may continue to spread at its margin, but finally the whole mass of cancer cells, becoming degenerate throughout, is replaced by a fibrous scar in which no cancer cells can be seen.

By the courtesy of Dr. Haaland, of the Imperial Cancer Research Laboratories, I am enabled to show you that similar changes may take place in the secondary deposits of mouse carcinoma. This slide shows a secondary nodule in the lung of a mouse, with advanced central degeneration, and infiltration of the degenerate portion by lymphocytes.

In the large secondary nodules, which present an intranodular stroma, the processes of repair cannot be so conveniently demonstrated, but they are essentially the same. Central degeneration is followed by fibrosis of the degenerate portion, and the nodule consequently becomes umbilicated like a sucked orange. In old metastases, such as this from the liver of which I show you a photograph, the central portion presents no evidence of cancer, and consists simply of dense fibrous tissue.

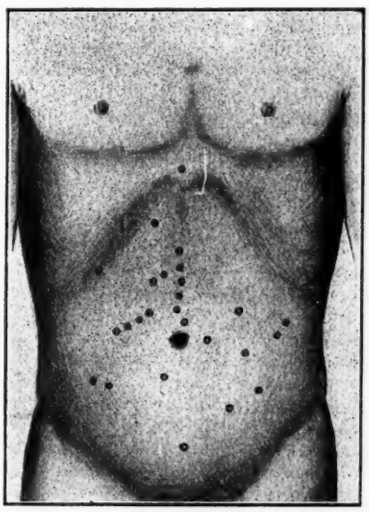


Fig. 1.—A chart of the subcutaneous nodules, spreading from a point just above the umbilicus, present in a case of stomach cancer one month before death.

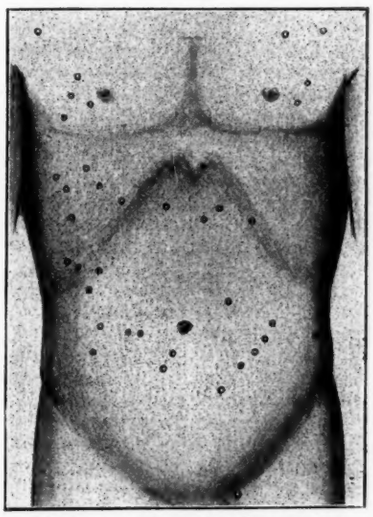


Fig. 2.—A chart showing the same case at the time of death. The nodules have continued to spread, but they have vanished from the region where they made their first appearance.

Centrifugal Spread of Repair as Affecting Groups of Secondary Nodules.

It has already been shown that the microscopic processes of repair in cancer spread in a regular centrifugal manner away from the point of origin of the primary growth. It might reasonably be suspected that, taking a group of macroscopic nodules, the same centrifugal spread of the process of repair would be noticeable, for the secondary nodules near the primary growth are necessarily older than those further away. Indications of the centrifugal spread of repair, as affecting groups of massive nodules, are not hard to find. For instance, in this photograph, which shows subcutaneous nodules round a breast cancer, the nodules in the immediate neighbourhood of the breast are large, confluent, and ulcerated, while those further away are smaller, and have not yet reached the stage of ulceration. But it is very difficult to obtain convincing evidence of the completion of this centrifugal process of repair in groups of nodules, owing to the anatomical complexity of the lymphatic system.

Conclusive observations can only be secured provided that it is possible to watch the spread of permeation and nodule formation in a lymphatic plexus of extensive area, accessible to observation and lying in a single plane, and provided also that the cancer obtains access to this plexus at a single definite point from which its centrifugal spread commences.

In rare cases of stomach cancer these exacting conditions are fulfilled. In some cases of gastric carcinoma I find that the growth penetrates the abdominal wall at a point in the middle line just above the umbilicus. At this point permeation extends from the subserous lymphatic plexus to the deep fascial lymphatic plexus, and commences to spread centrifugally in the latter plexus. This invasion is followed by the appearance of a crop of subcutaneous nodules spreading centrifugally from the umbilicus. Such a case was recently under the care of my colleague, Dr. Essex Wynter, and on two occasions, the first a month before death, the second at the necropsy, I made careful drawings to show all the subcutaneous nodules present. I would add that the second drawing was made without any reference to the earlier one. The later drawing shows that the centrifugal spread of permeation in the fascial lymphatic plexus had made considerable progress. But this is not the point to which I would especially draw your attention.

In the earlier drawing (Fig. 1) the region immediately around the umbilicus is thickly sown with nodules. In the later drawing (Fig. 2) not a single nodule can be seen within a considerable distance of the point at which the fascial plexus was invaded. These sketches, therefore, afford a convincing and at present unique proof of the centrifugal spread of macroscopic repair as affecting, not single nodules, but groups of nodules.

CAUSES OF CENTRIFUGAL DEGENERATION IN CARCINOMA.

Why does a carcinoma cell ultimately degenerate and die? The phenomenon cannot be ascribed to the hostility of the phagocytes, for it is one of the most striking features of the histology of cancer that degeneration of its cells precedes in point of time the access of wandering cells to the area of degeneration. Upon this point my observations have been confirmed by those of Bonney. Nor is the degeneration of the cancer cells due to the development of anticancerous properties in the fluids of the body, as Lomer is inclined to think. Beyond the area of degeneration the cells of the microscopic growing edge will be found actively spreading along the lymphatics and exhibiting a vigorous vitality, which sufficiently shows that no anticancerous bodies are present in the lymph. It would doubtless be true to say that failure of nutrition is the proximate cause of the degeneration which carcinoma exhibits.

We have seen that in any group of carcinoma cells the central cells—those furthest from the base of supply—are always the first to degenerate. But there is something special and peculiar about this failure of nutrition, for, as I have previously shown, immersion in the blood stream—the rich nutritive stock and common food supply of the body—is usually fatal to epithelial cells.

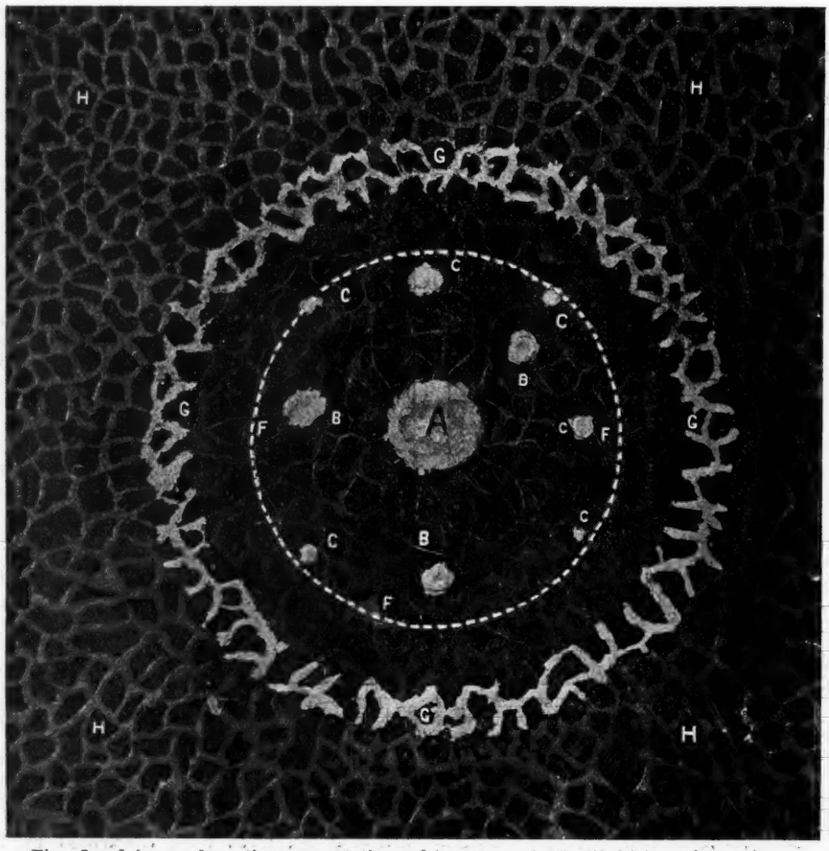
No doubt the excessive pressure produced by the active proliferation of the cancer cells is one cause of impaired vitality in the older deposits, and this pressure is increased by the contraction of the newly-formed cellular stroma in which the older foci of growth are embedded. There is, however, another factor to be taken into account, and one the importance of which I have only recently realized. If you look at this section of a permeated lymphatic, much distended and approaching the point of rupture,

you will see that a single layer of cells at the periphery, although necessarily subject to the same pressure as the more degenerate central cells, still preserves the appearances of vigorous life. The chief point of difference in the environment of the peripheral healthy layer of cells is that they, as contrasted with the central degenerate cells, are in immediate contact with a layer of endothelial connective tissue cells. In this section of a stomach cancer which I show you, the dependence of epithelium for nutrition upon actual contact with connective tissue cells is even more strikingly shown. The cancerous epithelium forms everywhere a single layer lining the distended lymphatics of the permeated subserous lymphatic plexus, and all the central cells have entirely disappeared.

The solution of the problem of centrifugal degeneration in cancer appears to be suggested by the two sections I have just shown you.

The Epithelial Cell an Obligate Parasite upon the Connective Tissue Cell.

Certain of the cells of the body—the leucocytes, for example, and probably the haemal endothelium—are nourished directly from the blood plasma. Others, including most, if not all, of the cells of the connective tissue, are fed by the diluted blood plasma which is known as lymph. But the epithelial cells, in the course of their specialization, would appear to have lost this power of taking up nourishment directly from the body fluids. Epithelium appears to depend for its nourishment upon the products of the connective tissue cell conveyed to it, either by actual contact, or at least by close contiguity. The inability of epithelium to nourish itself from the fluids of the body is not a mere theory. I have shown in previous lectures that immersion in the blood stream is nearly always fatal to cancerous epithelium. Veit's work upon the deportation of chorionic villi shows that the same thing is true for the normal chorionic epithelium. Moreover the chorionic epithelium, although specially designed to hang into the blood stream, exhibits by the imperfect segmentation of its cells and the formation of syncytium, a process analogous to that by which the toxin of the tubercle bacillus leads to the formation of giant cells. And I would here remind you that the so-called syncytium is not, as is so often thought, a structure peculiar to the chorion; it may occur in any carcinoma when its cells come into intimate relation with the blood stream.



Figs. 3 and 4 are schematic representations of two stages in the life-history of a carcinoma. The lymphatic plexus, H H H, and the microscopic regions of the carcinoma, are represented as highly magnified, while the primary growth and its naked-eye secondary nodules are reduced in size.

Fig. 3.—*A Carcinoma in the Evolutionary Stage.* The active primary growth, A, is surrounded by secondary nodules, B B, and by smaller and younger secondary nodules, C C. The circle F F F is an imaginary line, separating the clinically appreciable region of the carcinoma from the outlying microscopic region, in which is found G G G, the microscopic growing edge of permeated lymphatics. Beyond G G G is the normal lymphatic plexus, H H H, while inside G G G the vessels of the lymphatic plexus, represented as thin white lines, have been destroyed and converted into fibrous threads.

It would take too long to marshal the facts of normal histology which support this view that the epithelial cell is an obligate parasite upon the connective tissue cell. The many-layered epithelium of the skin which appears at first sight to contradict it, in reality forms one of the best proofs of its truth. The deeper layers of the skin epithelium are penetrated by a network of branching processes, easily visible in the negro because pigmented, derived from the underlying connective-tissue cells. The superficial layers of the epithelium, from which these nutritive processes are absent, are continually dying and being cast off.

In his recent Hunterian lectures,[6] my colleague, Professor Bonney, has established the new and very important fact that a local increase in the cellularity of the subepithelial connective tissues, accompanied also by a destruction of the elastic tissue, invariably precedes the appearance of a carcinoma. This increased cellularity is due to a precedent chronic inflammation. But if the chronic inflammation has progressed farther, and has reached the stage of fibrosis and diminished cellularity, he finds that there is little risk of a carcinoma originating in the fibrosed area. Dr. Bonney interprets the effect and mode of action of these changes as consisting essentially in the removal of various obstacles to the process of infiltration. He says:

> The tissue cell proliferation results in a rarefaction of the connective tissue in front of the advancing carcinoma cells, in the course of which mechanically resistant structures such as fibrous tissue and elastic fibres become softened and destroyed.

From my point of view, the precarcinomatous increased cellularity of the subepithelial connective tissues, which Dr. Bonney has demonstrated, acquires additional significance. If the epithelial cell, normal or cancerous, can live only as a parasite on the connective-tissue cell, an abnormal aggregation of connective tissue cells beneath an area of epithelium will obviously tend to promote epithelial activity, and will provide a body of hosts or caterers who will supply the needs of any epithelial cells which penetrate into the rarefied precarcinomatous connective tissue.

Thus Dr. Bonney's observations would seem to offer strong support to my view of the parasitic nature of epithelium. But newly-formed connective tissue, such as is found in the scar of a wound, and in the stroma of a carcinoma, does not maintain its cellular character indefinitely. It becomes more and more fibroid, until

only a few scattered cells, represented by mere nuclei, can be seen within it. According to Dr. Bonney, senescence of the stroma and degeneration of the cancer cells advance *pari passu*. And this is exactly what would be expected from the nutritional dependence of the epithelial cell upon the connective-tissue cell.

If it be granted that the cancerous epithelial cell depends for its adequate nourishment upon contact with a connective tissue cell, the centrifugal processes of repair in cancer become easy to understand. Considering first any small group of cancer cells, their continued proliferation must necessarily remove the more central cells from contact with the surrounding connective tissue, and must therefore lead to degeneration of the centre of the mass. In the second place, newly-formed connective tissue, such as composes the stroma of a cancer, rapidly and invariably becomes senile; that is to say, its cells disappear and are replaced by fibrous tissue, poor in cells, and therefore ill-adapted to nourish epithelium. Such appear to be the factors on which the natural cure of cancer depends.

It will be objected, and with some force, that certain carcinomata, neither at the time of the patient's death nor before, show any evidence of the centrifugal reparation which follows centrifugal spread.

It is certain, of course, that a carcinoma may cause death while it is yet in the infiltrative stage, and before there is any evidence of permeation; that is to say, the primary growth may be the only focus of growth present in the body. But even in such cases, ulceration, commencing at the centre, and spreading to the circumference of the growth, is a practically constant phenomenon, which testifies to the presence of commencing centrifugal repair. The evidence of centrifugal repair may be incomplete and partial simply because the life-cycle of the carcinoma, which probably varies extremely in length, may be still in one of its earlier stages at the time of the patient's death. At any period in this life-cycle, invasion of one or more of the serous cavities may take place, and may cut short the evolution of the growth by producing rapid visceral dissemination and death.

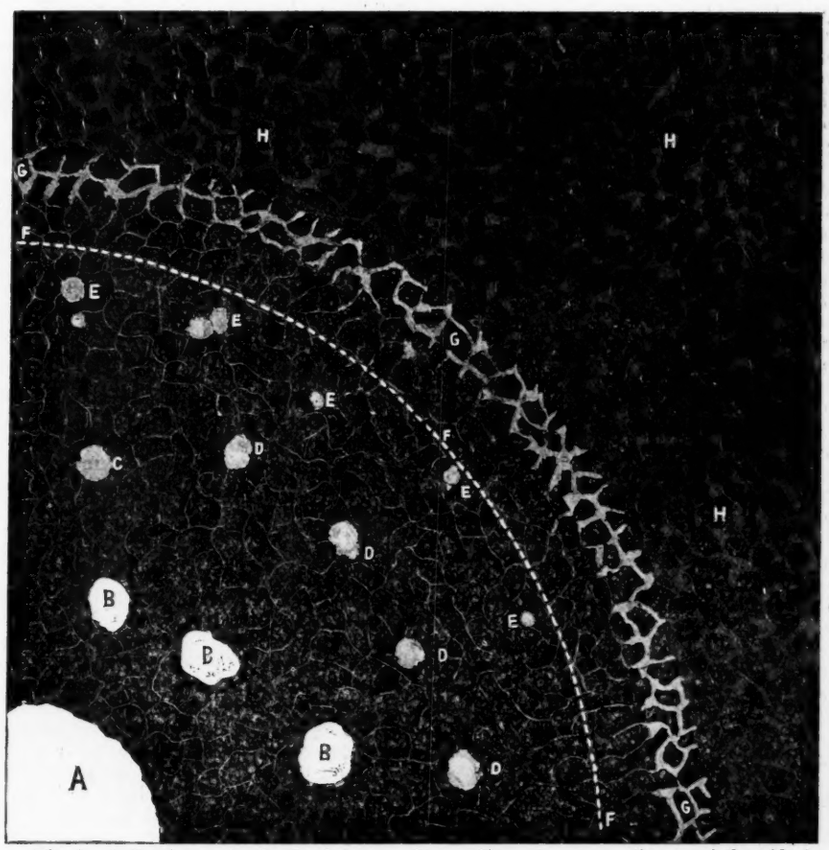


Fig. 4.—*A Carcinoma in the Involutionary Stage.* The primary growth, A, and the oldest secondary nodules, B B B, have now become completely fibrotic and inactive, and are represented by puckered scars. Fresh nodules, D D D, and others, E E E, still younger and more remote, have made their appearance in the rear of the microscopic growing edge, G G G, which, continuing to spread, has now attained a very large diameter, and is still advancing into hitherto intact regions of the lymphatic plexus, H H H. Within G G G all the lymphatic vessels have been converted into fibrous threads. Other letters as before.

THE LIFE-CYCLE OF A TYPICAL CARCINOMA.

From the facts which I have laid before you I think it is possible to work out a scheme of the life-history of a typical carcinoma.

Stage I.—The growth is infiltrating the tissue interspaces around its point of origin, but has not yet obtained access to the lymphatic vessels which open out of them.

Stage II.—The growth obtains access to the small lymphatic vessels near its point of origin, and permeation commences to spread centrifugally from this point. At this stage cancer cells obtain access to the trunk lymphatics, and embolic invasion of the lymphatic glands occurs as a minor and subsidiary process.

Stage III.—The permeative growing edge, spreading centrifugally, is cut off from the massive primary growth by fibrosis of the intervening permeated lymphatics. The symptoms dependent on contraction or puckering (retraction of nipple, flattening and shrinkage of the breast) consequently begin to show themselves, and the carcinoma becomes clinically recognizable.

Stage IV.—The massive primary growth continues to increase in size by infiltration. Around it, in the area of perilymphatic fibrosis, small macroscopic satellite nodules begin to manifest themselves. The permeative growing edge is now reaching such a diameter that the verge of operability may be approached (Fig. 3).

Stage V.—Although the growth continues to spread, centrifugal degeneration of the massive or macroscopic deposits is now beginning. It affects first the oldest portions of the cancer. The primary growth becomes degenerate and fibrotic at its centre, and consequently if the growth is on a surface, ulceration begins. The ulcer spreads centrifugally. The secondary nodules nearest to the primary growth degenerate from their centre outwards and disappear, while new ones spring up in the outlying area of lymphatic fibrosis left in the track of the still spreading microscopic growing edge.

Stage VI.—The proliferative energy of the massive or macroscopic primary growth is exhausted. It ceases to spread, ulcerates to its margin, and finally heals over, leaving a scar from which cancer cells have disappeared. The secondary nodules have disappeared from the area immediately round it, also leaving scars. The centrifugal spread of the permeative growing edge may conceivably at this stage be arrested, but it usually continues to spread indefinitely, leaving in its track fresh secondary nodules (Fig. 4). This cycle of events may be interrupted at any point after Stage II by invasion of the serous cavities, or in rare cases by successful blood infection, and by consequent rapid visceral dissemination shortly terminating in death.

CANCER THERAPEUTICS: A CRITICISM.

The literature of cancer therapeutics does not contain the record of a single fact which cannot be paralleled among the histories of untreated cases. How, then, is the value of any particular method of treatment to be determined? It is futile to bring forward a few isolated cases in which the shrinkage or disappearance of primary or

secondary growths has been observed, for these phenomena, as we have seen, belong to the natural course of the disease. Their occurrence as testimony to the value of a remedy would only be significant when they frequently and immediately followed upon its employment in a number of consecutive cases. But in any case where centrifugal spread has been rapid and regular and accompanied by a crop of secondary deposits, and where upon the application of a remedy no further deposits appear, the remedy may be fairly presumed to have exerted an influence. In this connexion it may be pointed out that cases of stomach cancer, with invasion of the fascial plexus at the umbilicus, and with a crop of skin nodules spreading from this point, afford the conditions for crucial experiment in cancer therapeutics which are absent in almost all other cases. The observer sees the growth, as evidenced by skin nodules, spreading from a definite point in a definite plane. With the patient's consent, local measures, such as *x* rays, might be applied to one half of the body, while the other half remains untreated as a control. The effect of constitutional measures might be determined by their effect on the observed rate of spread of nodules from the umbilicus—a rate which can be determined from week to week, if not from day to day. More careful observation of these cases would give a precision to the study of the medicinal therapeutics of cancer which is at present conspicuously wanting.

It is not too much to say that a study of the processes of natural cure in cancer absolutely destroys the clinical evidence in favour of trypsin as set forth by Dr. Shaw-Mackenzie, the pioneer and introducer of this treatment. And the same thing is true of all other internal medicaments at present known, as judged by the published evidence, with the single exception of Coley's fluid in the treatment of sarcoma, a remedy which appears to possess distinct value. There would seem also to be no doubt of the effects of *x* rays in promoting the natural tendency to fibrosis in masses of malignant tissue which are directly accessible to the influence of the rays. But a very thin layer of normal tissue is sufficient to protect cancer cells from the action of the rays.

Fibrosis of the primary growth is often interfered with by the onset of sepsis, which necessarily produces increased local cellularity of the connective tissue. The beneficial effects of curettage and escharotics in advanced uterine cancer, perhaps also the temporary good effects of *x* rays and high frequency currents, are probably partly due to the antiseptic value of these measures. After their use the process of fibrosis of the primary growth is able to resume its normal course, and great local improvement occurs, without any arrest of the spread of the disease.

Secondary Effects of the Process of Natural Cure.

One of the most striking facts brought out by my investigations is that the permeative spread of the cancer is followed by an almost coextensive destruction of the lymph-vascular system, and by contraction of the network of fibrous threads which replace the system of lymphatic vessels. The consequences are varied and important. They may be considered under the following three headings:

I.—*Contraction of the Tissues around a Carcinoma.*

The defensive process of perilymphatic fibrosis, and not the destructive processes of permeation and infiltration, is the cause of most of the symptoms by virtue of which an external cancer becomes clinically recognizable. In the case of the mamma, retraction of the nipple, flattening and shrinkage of the breast, adhesion to skin and fascia, all these symptoms are evidences of perilymphatic fibrosis, that is to say, of attempts at natural cure of the disease. Their absence is of no value in any given case as evidence against malignancy.

The tendency of a carcinoma to drag in towards itself a wide area of the surrounding apparently healthy tissues, a tendency which has never received a clear or adequate explanation, is an inevitable sequel of the process of perilymphatic fibrosis. If over a wide area round the growth the normal network of lymphatic vessels is replaced by a network of newly-formed, and, therefore, contractile, fibrous tissue, a general puckering and shrinkage of the affected zone is bound to follow.

II.—*Cancer en Cuirasse.*

The leathery thickening of the skin of the chest which is sometimes seen in breast cancer is not in its earlier stages accompanied by any cancerous infiltration of the integument. I have shown that the thin skin of the female breast may in these cases attain a thickness of 6 mm. before any sign of cancerous infiltration is manifest. The condition is primarily a pachydermia or lymphatic oedema of the skin, due to destruction of the fascial lymphatic plexus, and to consequent lymph-stasis. Only in the later stages is the skin actually invaded by cancer cells.

III.—*The Brawny Arm of Breast Cancer.*

According to Mr. Sheild, the brawny arm of breast cancer is due to the pressure of a mass of growth upon the axillary vein. But excision of part of the axillary veins is not, as a rule, followed by swelling of the arm, which, moreover, is frequently seen in cases where no palpable axillary growth is present. My senior colleague, Mr. T. W. Nunn,[7] has pointed out that the axillary veins may be completely enveloped in a cancerous mass, and yet the arm may not be swollen. He believes that the oedematous arm is due to obstruction of the main lymphatics by growth within them, and, no doubt, this is a part of the truth. But ablation of all the axillary glands, which must involve complete interruption of the trunk lymphatics, is not, as a rule, followed by oedema of the arm, doubtless because a collateral lymphatic circulation is established. Some other factor besides obstruction of the axillary trunk lymphatics is evidently necessary.

The permeation theory of dissemination appears for the first time to explain fully the condition. Perilymphatic fibrosis, the sequel of permeation, destroys the affected lymphatics utterly, leaving only fibrous cords to represent the original vessels. The process is not restricted to the lymphatic trunks, but affects also the smaller lymphatics. As soon as lymphatic fibrosis has extended some little way down the arm the lymphatic connexions of the whole limb are entirely severed, and the lymph can only return partially and imperfectly by percolating through the tissue interspaces. A condition of lymphatic oedema results, which in time produces the brawny arm of breast cancer.

The brawny arm may be found fully developed in cases where no evidence of active cancerous growth remains. It is a pachydermia affecting the arm in consequence of lymphatic fibrosis, and is to be regarded rather as an evidence of the activity of the natural curative processes than as a direct symptom of cancerous growth.

The Operation of Lymphangioplasty.

Pending the achievement of larger results by methods which are yet in their infancy, I am glad to be able to show you a minor instance of the immediate fruition of cancer research. I have been able to devise a simple operation by which, if it is permissible to judge from the strikingly successful result of a single recent case, the brawny arm of breast cancer may in future be prevented or cured with restoration of the usefulness of the limb.* The problem to be solved was this: How to provide a new set of lymphatic vessels for a limb in which the normal lymphatics have been destroyed.

Without going into detail I may say that the permanent introduction into the subcutaneous tissues of a number of buried silk threads running from the wrist upwards to terminate in the loose areolar tissue over the scapula appears to have solved the difficulty. In the case where I performed this operation the excess of fluid was rapidly drained away from the arm by capillary attraction, and the oedema subsided in a few days, although the condition was of nearly three years' standing. The pain was completely relieved. The operation is, so far as I know, an entirely novel one, and it appears to deserve a distinctive name, for it is probably applicable in pachydermia of every kind, whether due to the filaria, to cancer, or to septic lymphangitis.

I would suggest for it the name "lymphangioplasty," and I confidently hope that its usefulness will not be restricted to cancer, but that it will remove elephantiasis from the list of incurable diseases.[8]

This operation was the direct outcome of pathological

* The results of a number of other cases have since confirmed this expectation. See *Archives of the Middlesex Hospital*, vol. xii, p. 28.

investigations, which showed that the brawny arm of breast cancer indicates arrest rather than great activity of the cancer process, and is produced by lymphatic obliteration. Its success confirms the pathological conclusions upon which it was based, and shows that the more recent methods of pathological histology are full of unexhausted possibilities.

MEANS OF PROMOTING THE NATURAL CURE OF CANCER.

We have seen that the natural local cure of cancer is brought about by fibrotic processes which cut off the cancerous epithelium from that contact with connective tissue cells which is necessary to maintain its vitality. Superficially, at any rate, this process presents some analogy with the natural cure of tubercle, which also takes place by a process of fibrosis. And certain cases in which I have seen great apparent benefit to cancer patients as the result of a change of residence from town to country, or from a sea voyage, lead me to suggest that the open-air treatment, which has proved so successful in tubercle, may be worthy of trial in the more chronic cases of inoperable cancer. The treatment as applied to tubercle would require modification for cancer; the carcinoma patient, for instance, as contrasted with the tuberculous patient, would probably require less food and more exercise; but there would appear to be no very strong objection to the tentative treatment of cases of inoperable cancer side by side with cases of tubercle in sanatoriums. Under no circumstances whatever should the treatment be recommended as a substitute for operation, if operation is possible.

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THE TREATMENT OF CANCER BY THE USE OF POTASSIUM BICHROMATE.

BY JAMES FENWICK, L.R.C.P., L.R.C.S.EDIN., L.M., L.F.P.S.GLASG.,
ACCRINGTON.

[A PRELIMINARY COMMUNICATION.]

THROUGH the courtesy and indulgence of the Editor of the BRITISH MEDICAL JOURNAL, I am permitted to lay before the profession, of which I have the honour to be a member, a number of cases of cancer successfully treated by the use of injections of bichromate of potassium into the substance of the tumour. The dose used is from 7 to 10 minims of a sublimate solution; in some cases 15 minims are injected. In 1906 I submitted a paper on the treatment of rodent ulcer, which perhaps at that time was not of sufficient importance to claim publicity. Since then, however, about 25 cases of cancer treated by my method, with notes, were presented to the Académie de Médecine, Paris (November 29th, 1908). It is these cases, with notes, I herewith present for the unbiassed and charitable criticism of my professional brethren.

Fig. 1.—Case II. Cancer of breast beginning to slough.

CASE I.

L. A. R., aged 47. She had her breast taken off at the Victoria Hospital, Burnley, in August, 1907. In January, 1908, she consulted me, having first consulted Dr. Jackson of Nelson, who informed her that the cancer had returned. There was a lump about the size of a hen's egg in the line of the cicatrix. I commenced treatment in January, and it was quite well in March, 1908. The result of the treatment is that there has been no further recurrence. She has lost the cancerous cachexia, and is looking quite well and feeling strong. This was a case of secondary scirrhus.

CASE II.

Miss N., of Nelson, aged 42. She came to me on May 21st, 1907, with a lump in the breast. This the Clinical Research Association, London, reported on as follows (May 30th, 1908): "This is evidently a malignant growth of a carcinomatous type. But the specimen is too small to say whence it has originated." She was not well until June, 1908, on account of my having been ill with rheumatic fever, and the treatment having been suspended. The photographs show the case when it began to slough, and when (on November 3rd) it was quite well.

CASE III.

Mrs. B., of Bristol, aged about 54. She came to me in June, 1906, with large growth in breast. The doctor in Bristol advised her to have breast taken off for cancer. On examination I found a large growth which had fastened itself upon the ribs just over the heart. She was under treatment about four months. When the slough came away a large portion of one rib came away also. Dr. Laurent, Professor of Operative Surgery at the University of Brussels, saw this case at my house. His opinion was that there had first been some tuberculous condition preceding the cancerous growth. I had a report from her on October 28th, 1908. She is quite well, with the exception of some peripheral neuritis. Her own doctor in Bristol is of opinion that the general neuritis is due to an exposed intercostal nerve—a nerve exposed by the portion of rib sloughing away. She put on 20 lb. in weight after treatment. She looks well and has lost the cancerous cachexia which previous to treatment was well marked. Dr. Dymoke and Dr. Reynolds, of Bristol, both say it was a case of cancer.

CASE IV.

Mrs. K., of Blackburn, aged 82. She came to me in 1906 with a large tumour in the posterior triangle of the neck. The Clinical Research Association report, November 3rd, 1906, was: "This specimen is a portion of the integument. Its deep surface is invaded by a new growth, which appears to be an epithelioma. There are no cell nests, but the central cells in the processes have undergone granular degeneration. The lesion is evidently a secondary formation." The photographs (see p. 590) show the growth previous to treatment and the condition afterwards. This patient died about December, 1907, from some intercurrent disease; I think it was bronchitis.

CASE V.

T. S., of Accrington, aged 77. He had a rodent ulcer on right right side of nose as large as a franc. He went to Dr. Frankish, who told him it was a cancer, and refused to attempt anything for him. He came to me on November 5th, 1907, and was well in seven weeks. I applied bichromate upon cotton-wool to the place, the cotton-wool remaining *in situ* until the following day. He had four applications. Slough followed, which separated in about three weeks, leaving a clean granulating sore, which healed up in a week.

Fig. 2.—Case II. Cancer of breast. After treatment.

CASE VI.

Mrs. McL., aged 52. First went to Dr. Reid of Preston, then came to me in February, 1908. The Clinical Research Association report, February 14th, 1908, was: "This piece of tissue is infiltrated by a carcinoma, which is spreading along the lymphatics in the cutis vera. The growth has the usual characters of a scirrhous carcinoma." She was quite well on July 20th, 1908, as she was also at the last report on November 3rd. Accompanying are photographs (see p. 590).

CASE VII.

Mrs. P., aged 53. She saw Dr. Cran Duthie of Blackburn and Dr. Rawlins of Manchester—a cancer specialist—in May, 1907. Both advised her to have the breast off. She came to me the same month, and was quite well by October 20th, 1907. She

had about forty injections of 7-minim doses. She came to the surgery about every other day.

Case VIII.

Mrs. G., of Blackburn, aged 68. She first consulted Dr. Taylor and Dr. Nutter, who told her she was too old to be operated upon. She came to me on May 9th, 1907, and was under treatment twelve weeks. The cancer was in the breast. The Clinical Research Association reported on May 13th, 1907: "This section of nipple shows at one end (marked with ink-line) a small area of tissue infiltrated with carcinoma. The growth seems to be of the columnar-celled type, such as would originate from duct epithelium." She had about twenty injections. She reported herself on November 3rd, 1908, as being quite well.

Fig. 3.—Case IV. Epithelioma of neck. Before treatment.

Case IX.

A. P., of Blackburn, aged 42. He first saw Dr. Martin, senior surgeon to Blackburn Infirmary, and was operated upon for a growth in the root of the right ala of the nose. He came to me on November 26th, 1906. The Clinical Research Association reported on December 21st, 1906: "This growth is a carcinoma of the skin of the rodent ulcer type. It consists of branching, epithelial columns, possibly arising from sebaceous glands or hair follicles, and infiltrates the tissues with a characteristic rosetted outline." He had about forty injections, and was attending my surgery for about six months. He still keeps in perfect health.

Case X.

J. H., of Lytham, aged 48. He first consulted Dr. Millan, of Lytham; then Dr. Sellers, of Preston Infirmary. He was operated upon by the latter at Preston Infirmary in November, 1905. He came to me in April, 1906, the growth having returned in four months. I gave him six injections, and he reports to me (November 3rd, 1908): "I enjoythe best of health, and have felt no effect of my lip since you treated it."

Case XI.

Mrs. T., of Muswell Hill, aged 49. She came to me on June 9th, 1907, with cancer in the cheek, after having been eighteen months under treatment in London without any good result. The Clinical Research Association report of June 12th, 1907, was: "This specimen is a carcinoma of the skin, belonging to the rodent ulcer type. It consists of branching masses of small epithelial cells, and shows a tendency to cystic change in places from degeneration." In nine weeks she was quite well and returned home. I made nine to twelve injections.

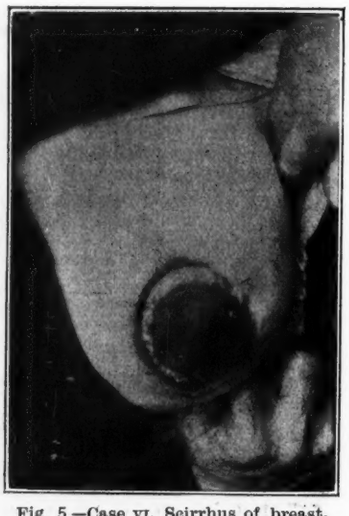

Fig. 5.—Case VI. Scirrhus of breast. Before treatment.

Case XII.

Mrs. B., of Blackburn, aged 57. In March, 1906, she consulted Dr. Bradley, of Blackburn, who advised her to have a lump cut out of her breast. She came to me and I found a lump as large as an egg. I commenced treatment in March, 1906. She had eighteen injections of bichromate (10 per cent. solution) of about 7 minims each, these being given every other day. A slough followed, which stank very much. In September she was quite well, and has kept well ever since. The later of the accompanying photographs (see p. 591) was taken on November 3rd, 1908.

Case XIII.

Mr. E., of Harle-soike, Burnley, aged 28. He had a growth upon the upper lip. He first consulted Dr. Marsden, of Burnley, who for eighteen months treated it in various ways. He declared it to be cancer, and advised him to have it operated upon. The patient consulted me in July, 1906. I used about six injections. A report from him on November 3rd, 1908, says he is quite well and there has been no return.

Case XIV.

Mrs. B., of Church, aged about 50. She had a lump as large as a duck's egg in the breast. Two doctors told her it was cancer, and advised her to have the breast taken off at once. Instead of having that done she came to me in January, 1906, and by May was quite cured. I have a photograph showing the tumour in the sloughing condition coming away from the previously unaffected skin, and another showing the result after treatment. In November, 1908, I saw her again, and the condition remained healthy. A soft white scar was left. The glands in the axilla, which had formerly been enlarged, had now resumed their normal condition, and the patient said she had never felt better in her life.

Fig. 4.—Case IV.[a] Epithelioma of neck. After treatment.

Case XV.

Mrs. A., of Colne, aged 46. She first went to Dr. Doyle of Colne, who said she would need to have her breast off. She came to me on September 22nd, 1906. She had fifteen injections of about 7 to 10 minims of potassium bichromate of unusual strength. On January 21st, 1907, she was quite well, and has remained so up to date (November 3rd, 1908).

Case XVI.

Mr. B., of Accrington, aged 61. He first saw Dr. Greenwood of Accrington, who told him he had cancer of the tongue. He came to me about June 15th, 1906. He had six injections, and was quite well on September 15th, 1906. Report on November 3rd, 1908: "Quite well."

Case XVII.

Mrs. P., of Clayton-le-Moors, aged 44. She first consulted Dr. Clegg, Surgeon to the Victoria Hospital, who told her she had cancer of the breast. She came to me on October 19th, 1906. She attended me about three months and had about forty injections. She was quite well on November 3rd, 1908.

Case XVIII.

Mrs. B., of Blackburn, aged 46. She was operated upon in March, 1896, for a lump in the breast. The lump reappeared in September, 1907. Dr. Steward of Liverpool and Dr. Walters of Manchester (both specialists in cancer) declared the growth to be cancerous in 1896, and its reappearance in 1907 appears to confirm the diagnosis. She came to me in October, 1907. She had twenty injections, after which the growth sloughed out, and she is now quite well. She was under treatment about six months. Reported to me, November 3rd, 1908, as quite well.

Fig. 6.—Case VI. Scirrhus of breast. After treatment.

Case XIX.

Mrs. D., of Blackburn, aged 47. She saw Dr. Bowen and Dr. Shaw of Blackburn, who said she had cancer of the breast. She came to me in June, 1906, and was under treatment until November 20th, 1906. She had twenty-six injections, after which the growth sloughed out. The report to hand, November 3rd, 1908, says she keeps quite well.

I should like to call attention to two of the cases—namely, Nos. I and X—which prove to my mind that the treatment is superior to operation. Then, again, let me point out the important fact that in Case VII the result of the treatment is that, after the menses had been stopped

for some years, they were re-established, appearing regularly for five days every month without pain, just as in her early and healthy days.

Here, then, as the above cases abundantly show, is a treatment which can be carried out in every surgery. It is simple and inexpensive, within the means of the humblest patient, and I can conscientiously say in respect of rodent ulcer and epithelioma, which I have been treating for fourteen years, that it is a treatment that will be lasting in its effects, if carried out in the manner I will indicate in a future paper if permitted. There need never again be seen a case of rodent ulcer which has eaten away the eye or the frontal bones and exposed the brain. If any such case is seen again it will be the fault of the profession or the wilful neglect of the patient. If called upon for further or more detailed proof I will supply it with alacrity.

Cases Treated by Dr. Pilkington, of Philadelphia.

For the following three cases I am indebted to Dr. Pilkington, of Philadelphia, who came from America to my house in 1906, and stayed for a week in order to learn the treatment:

CASE I.

Geo. F., aged 68, painter, veteran of civil war. He first consulted me in July, 1907. He had an irregular lesion, about 4 cm. in diameter, just anterior to and on a level with the right ear, gradually increasing in size during the past six months, and with no tendency to heal. There had been no special treatment for a malignant ulcer, it being treated as an ordinary one. The pathologist's report was that it was an epithelioma of a fibrous character. The edges of lesion were thickened and rounded, with a marked destruction of subcutaneous structures. There was no history of traumatism, but much exposure to the sun and weather. The patient gave a history of long bleeding following cuts or scratches, and this proved to be the case during treatment, bleeding from a needle puncture often persisting for fifteen minutes or more; and in August, 1907, he spent a week in the local hospital after a copious and unexpected haemorrhage from the lesion. There was difficulty in forming a firm slough, owing to a tendency for a haematoma to be formed after an injection; but when granulation set in healing was uneventful. After twelve months the cicatrix is soft and flexible and appears likely to be so permanently. Patient has recovered his health fully and is following his occupation.

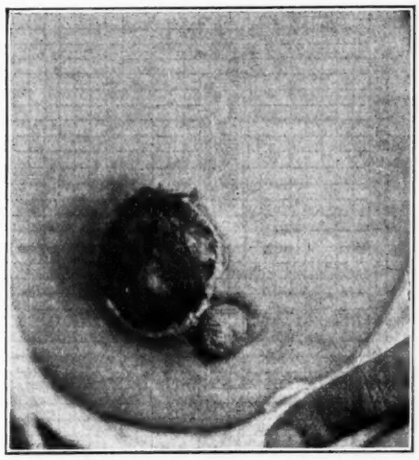

Fig 7.—Case XII. Lump in breast. Before treatment.

CASE II.

Thos. G., aged 78, West Chester, U.S.A. Labourer. Veteran of war between the States. He said that for ten years he had had sore on left shoulder, which would respond but poorly to treatment. On examination I found a rather poorly nourished patient; general health much below par; a large pear-shaped superficial epithelioma over left shoulder, having its base at the spine of the left scapula and extending below the lower border of the clavicle, forming an ulcer the size of a man's hand, with a small island of undestroyed skin near the centre. From time to time the ulcer had been curetted, cauterized with nitric acid, and treated with astringent and mild caustic powders in an effort to heal it up, but never with more than slight success. On July 20th, 1906, I began to apply locally a saturated solution of potassium bichromate, repeated at irregular intervals, for although his treatment was entirely gratuitous, he never could be induced to report at regular intervals. In about five weeks a firm thick slough had formed, covering the entire ulcer, with the exception of the small island in the centre. After this he reported but once in two months, at the end of which time the ulcer was entirely healed to the centre point, where there was a firm scab; this is well shown in a photograph taken at that time. The newly-formed skin was very soft and pliable, well supplied with blood vessels, and more resembling normal skin than cicatricial tissue. He was ordered to report regularly to have this centre spot treated, but failed to do so. On my inquiry in November, 1908, he reported that this spot promptly forms a dry scab, but that he daily knocks it off by carrying a shovel on that shoulder when following his occupation; the area of reformed skin retains its soft, adherent character.

I cite this case to show the penetrating properties of potassium bichromate, and the ease with which these rodent ulcers can be removed, without the patient's losing a day's work. I much regretted the intractable nature of this patient, for it entirely prevented me from observing the rapid growth of new skin over such a large area.

CASE III.

Thomas F. G., of Philadelphia, U.S.A., aged 48; occupation, contractor. Father died at 52 years, heart trouble; mother living, aged 70, healthy; brother killed on railroad; six brothers and sisters living, all healthy. No known case of cancer in family on either side. Patient lost one leg in railroad accident. First noticed fever blister on lower lip about November, 1905, which did not heal up. In July, 1906, he went to the Samaritan Hospital, where his disease was diagnosed as an epithelioma, and was treated by *x* rays for three months. The surface healed up, but he had a hard callus underneath, which was sore, much like a boil. On November 10th, 1906, he consulted a Philadelphia cancer doctor, who applied four plasters between that date and March, 1907; but the growth steadily got worse, half of the lower lip being now involved. Early in April, 1907, he entered a cancer sanatorium on the Upper Hudson, New York State, and was treated by plasters for six weeks; but the growth began to increase at an alarming rate, and the patient, becoming discouraged, returned home to consult his family. On May 22nd I saw him, in consultation with Dr. Macfarland, and found that the growth involved the whole of the lower lip and the chin to the lower border of the jaw, also extending around the left angle of the mouth and upper lip for half an inch. In the left cheek, and firmly attached to the cauliflower-like mass on the lip, was a gland-like mass of about the size of a large grape. The discharge was extremely offensive, and it was impossible to prevent its entering the mouth with the saliva. The patient was very cachectic, about 50 lb. below his normal weight, and suffering from extreme nervousness with insomnia, due to anxiety as to the outcome of the disease. Advised that the exuberant mass be excised at skin margin, to prevent the extensive absorption of toxins. Excision was done under ether; the blood vessels ligated, for they were numerous and very large; no effort was made at resection, or to remove the mass from the left cheek. A simple dressing was applied until the following day, when the base was first injected with half a gram of a saturated solution of potassium bichromate. Injections were made every other day, the dose being increased until 1½ grams were used. There was considerable pain, but it was controlled by a judicious use of hypnotics, administered hypodermically a few minutes before the injection. A good slough formed of the whole growth, and came off early in August, 1907. A portion of the periosteum of the inferior maxillary bone, about the size of an almond nut, was destroyed, but granulations being free, with a good blood supply, healing rapidly followed, the patient being discharged November 1st, 1907.

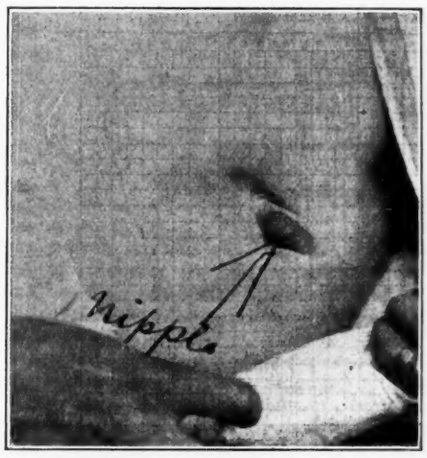

Fig. 8.—Case XII. Lump in breast. After treatment.

At this time (December, 1908) the patient is in the best of health; the cicatrix is soft and pliable, and abundantly supplied with blood vessels, and there is but little deformity.

THE foundations of a medical institute for the education of women have been laid in Odessa.

A BILL has recently been introduced into the Pennsylvania State Legislature providing that a marriage licence shall not be issued until each of the applicants shall present to the clerk a certificate from an authorized practitioner stating that, to the best of his knowledge and belief, the person applying for the licence is not afflicted with pulmonary tuberculosis, epilepsy, insanity, imbecility, idiocy, or other hereditary disease.

THE SCIENCE COMMITTEE
OF THE
British Medical Association.

REPORT CXII.

OBSERVATIONS ON THE PHYSIOLOGY OF THE FEMALE GENITAL ORGANS.

BY

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and

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II.—MENSTRUATION.*

OUR work on menstruation has for the most part been taken up with investigations into the relationship existing between this function and the calcium metabolism, and we have used in our deductions facts and observations which we demonstrated in connexion with the general calcium metabolism—alluded to in Paper I—as well as those which we now present as the result of our experimental and histological researches into the physiology of the function itself.

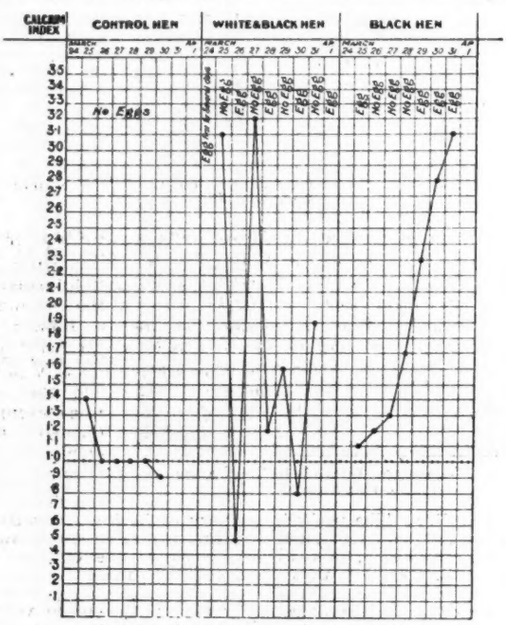

Fig. 1.—Systemic blood of hens—calcium indices.

As one of us (W. B. B.) has already stated, the idea of some such relationship existing was engendered by morphological considerations in regard to certain egg-laying species, especially birds, which excrete lime salts in large quantities during this process from the calcium chamber, or lower part of the oviduct.

It has been asked why we used birds in these experiments. The answer seems so obvious that we are afraid we may have mistaken the point of the inquiry. Hens were used because we presume that no one will deny that they do excrete calcium in this way, and we thought that if we could prove certain histological and experimental analogies between the oviducts of hens when laying and human and other mammalian uteri when menstruating, we should have done all that could be reasonably required to prove the hypothesis we had set forth—apart from further evidence, of a more clinical nature, we are prepared to offer.†

First of all, then, we examined the systemic blood of three hens on consecutive days for about a week. We stipulated that one at least should be a non-layer for a control, but otherwise we were unaware of the eggs laid until the experiment was completed, although, of course, our charts soon gave us an inkling of what was happening.

From the charts which illustrate the results obtained it will be seen that the first, or control hen, showed practically no changes in the calcium index from day to day. The second hen, laying every other day, showed a marked drop after laying an egg, with a big rise the next day in preparation for the laying of an egg on the alternate day. The third hen was very interesting. An egg was laid on the first day and the index was low. This index remained low for several days, consequently no egg was laid, but finally the index rose and remained so high that an egg was laid on every day during the rest of the observation. The calcium content may have dropped for a short time after the laying of the egg, but the fall was of such short duration that it was not observed—a rapid rise, or maintained high index, being necessary for daily egg laying.

We should like to hazard the suggestion here that the well-known vaso-dilatation which occurs in the combs and wattles of laying hens is due to the drop in the calcium content of the blood whereby a sort of chilblain condition is produced.

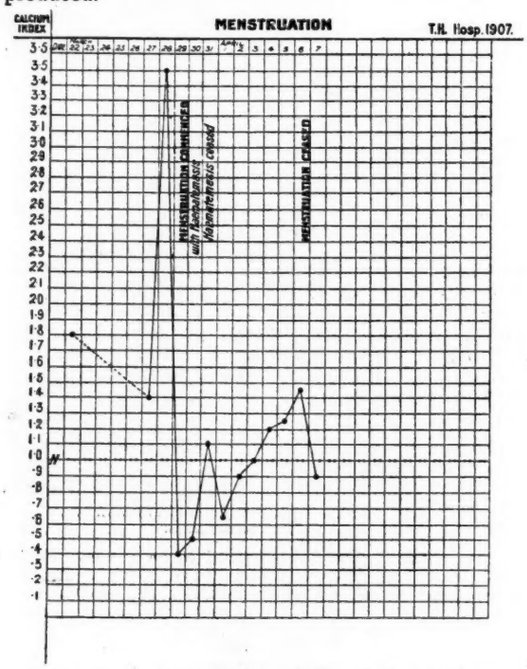

Fig. 2.—Systemic blood calcium indices during vicarious menstruation.

Now these experiments are very important, and we think that the result was only what one would be reasonably led to expect if the matter were considered at all.

It has been stated by Dr. Amand Routh when discussing the paper of one of us,[1] that he "could not see the force of the charts showing the variations of the lime in the blood of the hen which laid eggs on alternate days, for the lime for any particular egg was required not on the day before it was laid, but several days before; and many eggs were in the process of development all the time." Now we cannot see where an explanation is required. Surely a comparison between Chart 2 and Chart 3 (Fig. 1) makes matters quite clear. If the hen is to lay *every* day, it must maintain a high index, with at most a drop for a few hours. If it cannot do this, it will only lay when it has the requisite high blood content which in Chart 2 occurred on alternate days. In these experiments the eggs were, as is usual, laid in the morning, and the blood estimated in the afternoon. Further, in reference to the statement that many eggs are in the process of development at the same time, we would point out that this is only true of the ovum and yolk sac, and that only one egg receives the further coverings of albumin and

* Based upon a paper read by W. Blair Bell before the Gynaecological Section of the Royal Society of Medicine, July 9th, 1908, "Menstruation and its Relationship to the Calcium Metabolism."

† We may call attention also to the fact that the lowest known mammal (*Monotreme*), the ornithorhynchus, lays calcium-coated eggs. If any one can furnish us with a female specimen of this rare creature we shall be extremely pleased.

shell at one time, *these processes being completed in a few hours.*

We will now deal with some facts and experiments which are of themselves just as convincing in regard to animals and the human subject. Having got the idea

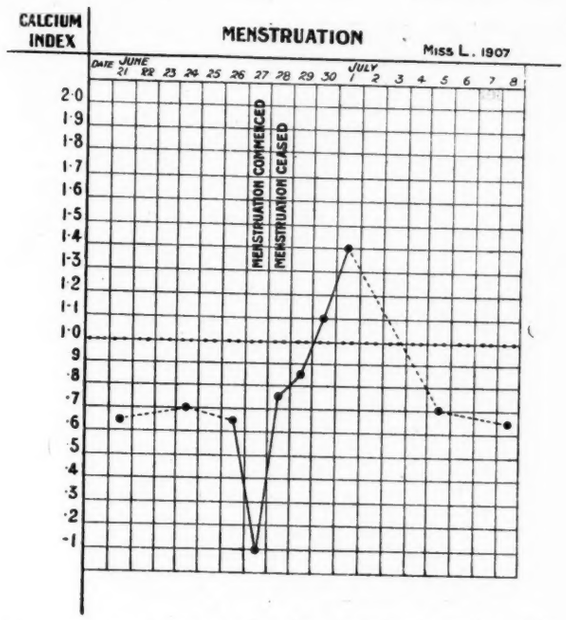
CALCIUM INDEX
MENSTRUATION
Miss L. 1907
DATE JUNE 21 22 23 24 25 26 27 28 29 30 JULY 1 2 3 4 5 6 7 8
2·0 1·9 1·8 1·7 1·6 1·5 1·4 1·3 1·2 1·1 1·0 ·9 ·8 ·7 ·6 ·5 ·4 ·3 ·2 ·1
MENSTRUATION COMMENCED
MENSTRUATION CEASED

Fig. 3.—Systemic blood calcium indices during menstruation, with hystero-epilepsy.

in regard to the existence of some connexion between the calcium metabolism and the female genital organs it of course at once struck us how easy it was to explain on this theory the fact that menstruation is nearly always in abeyance during lactation, for we know what an important and physiologically predominant ingredient of milk calcium is. It was easy to understand, too, why menstruation should frequently be absent in the debilitated, since we had already observed the important part the calcium salts play in the repair of diseased structures,[2] and that this form of amenorrhoea is invariably cured by the administration of lime salts; and why this function only commences when the economy has lime salts to spare from the constructive claims of the body.

To come to the actual observations on women. First, in regard to the systemic blood. There is always a very marked drop in the calcium content just before the menstrual bleeding commences. Often this drop is preceded by a marked rise (compare Reference [3]). The accompanying chart (Fig. 2) illustrates both of these points. It is the chart of a girl who is subject to haematemesis each menstrual period—a true case of coincident vicarious haemorrhage. We had her in hospital some time under observation.

The next chart (Fig. 3) illustrates the systemic blood content in another class of case. The patient was suffering from minor hystero-epilepsy, due to calcium deficiency, and was completely cured by the judicious administration of calcium lactate. Her premenstrual index was low. With the onset of bleeding, which only lasted for twenty-four hours, there was a marked drop. Though not so apparent as in the last case, it is almost as great relatively, in that the content dropped to one-sixth of the previous amount.

It is not easy to obtain the chart of an absolutely normal menstrual cycle. We hardly remember seeing a woman who was without a single symptom at this period; but

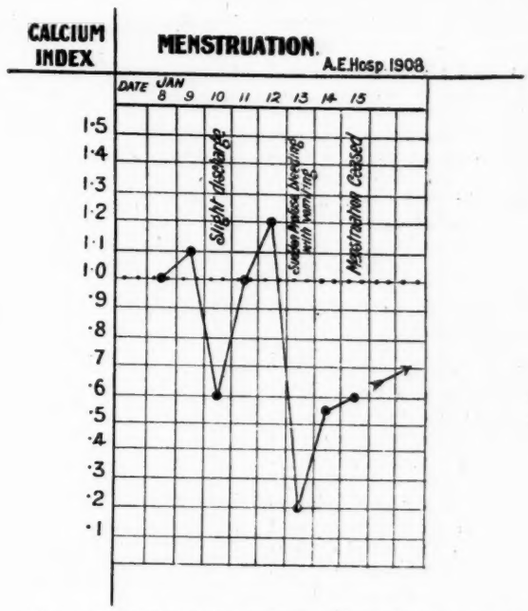
CALCIUM INDEX
MENSTRUATION.
A.E.Hosp 1908
DATE JAN 8 9 10 11 12 13 14 15
1·5 1·4 1·3 1·2 1·1 1·0 ·9 ·8 7 ·6 ·5 ·4 ·3 ·2 ·1
Slight discharge
Menstruation Ceased

Fig. 4.—Systemic blood calcium indices during normal menstruation.

the third chart (Fig. 4) illustrates what we consider to be as normal a chart as it is possible to obtain from the human subject. In this one sees a slight rise followed by a drop—in some cases one sees two or even three abortive attempts, as it were—a further rise follows, then a big drop occurs with the onset of menstruation and any attendant symptoms the woman may periodically suffer from. In this case the patient suffered from pain and vomiting. As has been already pointed out elsewhere, it is important that the blood should be taken for the estimation of calcium at the same time each day.[2]

There is, then, a marked drop in the systemic blood calcium content of the human subject, which is most marked just before the bleeding occurs. In the same way, the formation of an egg leads to a depletion in the systemic blood of birds; and in considering this we were next led to examine the excretion of the uterus during menstruation.

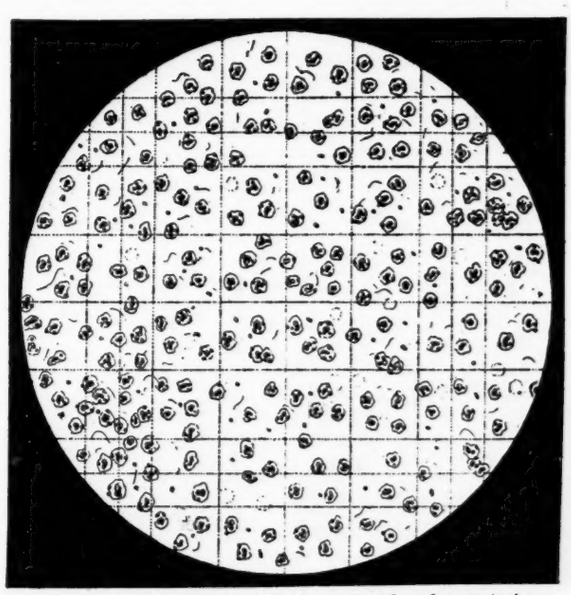

Fig. 5.—(×420.) Menstrual discharge, first day; leucocytosis.

At the very commencement of menstruation the discharge is largely composed of leucocytes, and this local leucocytosis, which usually precedes the actual bleeding, is extremely interesting. For an examination of the discharge at this period by the method for calcium estimation mentioned shows that there are not only a large number of free crystals, but also a far larger number precipitated within the white corpuscles themselves (Fig. 5). This was so surprising to us that we should have hesitated to give credence to what we saw, or thought we saw, or to have drawn deductions therefrom, had not other more authoritative observers than ourselves kindly examined the specimens and agreed with us. Professor J. E. S. Moore informs us that in some of the

lower forms of life excretion is carried out by means of leucocytes which may come to the surface and be thrown out, or even go back after discharging their contents.

Now this is probably an instance of what has been called pinocytosis.[4] We have to thank Dr. R. J. M. Buchanan for calling our attention to this subject, which he did after one of us had stated elsewhere[2] that it was probable that the leucocytes absorbed the calcium in a fluid form, and carried it from the glands to the exterior, possibly preventing a free secretion of calcium compounds which might increase the coagulability of the blood *in utero*. We shall allude to this point again in a moment.

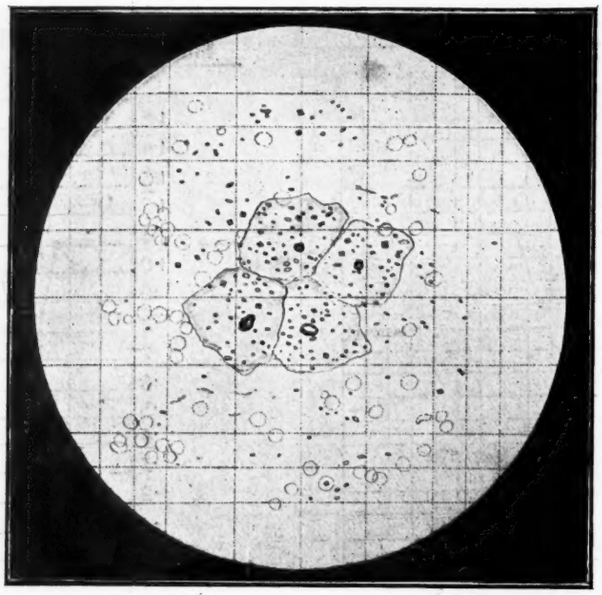

Fig. 6.—(×420.) Menstrual discharge, third day.

An examination for calcium salts in the menstrual discharge at a later period—third to fourth day—shows that there is still a marked excess as compared with the systemic blood; but the discharge is then sanguineous and contains the usual vaginal epithelial cells with but a few leucocytes, and it shows a marked tendency to clot (Fig. 6). Thus it will be seen that there is an excretion of calcium coincident with the fall in the blood of the calcium content.

Further, to prove these views we tied the uterine horns of rabbits and examined the contents. The fluid thus collected was found to be exceedingly rich in calcium—more so in the adult menstruating rabbit than in the virgin. In Fig. 7 is seen the fluid collected from a young non-menstruating virgin rabbit. Here one finds the calcium combined or mixed with mucin with which it is precipitated. In the older menstruating rabbit it exists in larger quantity, free, as well as with the mucin and leucocytes, as is seen in Fig. 8.

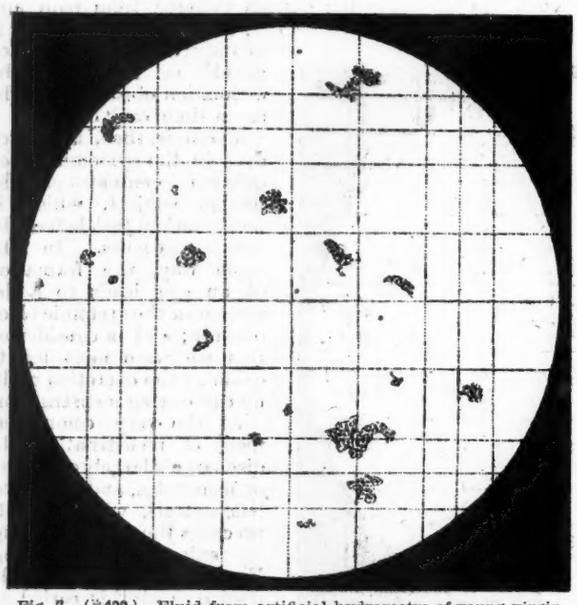

Fig. 7.—(×420.) Fluid from artificial hydrometra of young virgin rabbit.

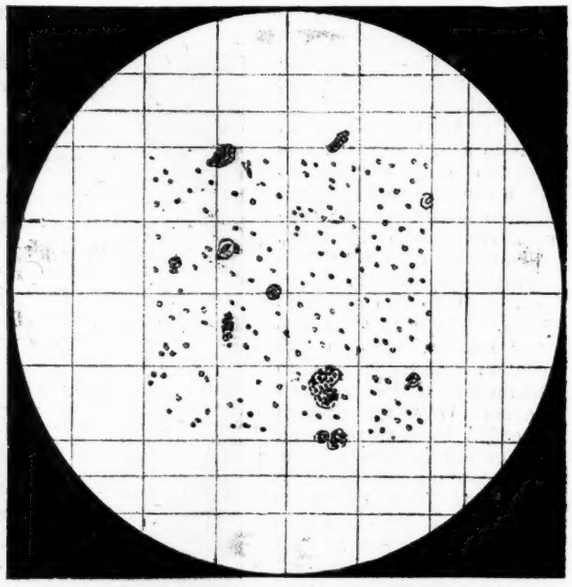

Fig. 8.—(×420.) Fluid from hydrometra of menstruating rabbit.

We may here mention that the secretion from the Fallopian tubes contains very little calcium in comparison with the quantity secreted by the uterus. We performed several experiments to test this point.

To complete the chain of evidence the menstruating uteri of women and rabbits were next examined histologically.

We found, as others have done, that there is a marked activity in the glands at this time, with a diapedesis of leucocytes in the neighbourhood. In Fig. 9 is seen a section of the menstruating rabbit's uterus under a low power. In Fig. 10 a gland from the same section is shown under a high power. It is a gland in a state of activity. Leucocytes are seen outside the gland, and in the process of making their way between the gland epithelium. To this we would call special attention. It will be noticed that they become elongated and flattened. They were recently observed and figured by Marshall and Jolly[5] in this condition, but these observers concluded that these elongated cells were merely gland epithelial cells in an actively secreting condition. Ernst Holzbach[6] also mentions the same cells, and comes to the same conclusion as Marshall and Jolly.

Lastly, it will be observed that there is a collection of leucocytes within the gland lumen, embedded in the secretion of the gland. We believe that these leucocytes then carry some calcium compound with them to the exterior. Apparently the columnar epithelium that lines the interior of the uterus plays the same part as that lining the glands, which are formed by a process of invagination from the surface.

In Fig. 11 the same thing is seen happening in a gland from a menstruating woman's uterus. We have not space here to discuss the other points of histological interest, for they are many and somewhat controversial. But we cannot pass on without illustrating the histological analogies to be observed in the calcium chamber of the hen. In Fig. 12 is seen a section (low power) of the calcium-secreting chamber of a non-laying ("sitting") hen. In marked contrast with this is a section under the same power—shown in Fig. 13—of the calcium-secreting chamber of a laying hen. In the former the *rugae* or papillae are small, and the stroma underlying the epithelial

layer full of cells which have hardly any definite glandular formation (as is seen in Fig. 14). In the latter (Fig. 13)—from the laying hen—the *rugae* are large and there is a great regularity of actively-secreting glands, as will be seen in the high-power sections (Figs. 15, 16, and 17).

In Fig. 15 there are two points of interest to which we attach some comparative importance. At one spot is seen a rupture in the continuity of the epithelial surface, such as can be seen in one place in the menstruating rabbit's

Fig. 9.—(×250.) Menstruating rabbit's uterus.

uterus (Fig. 9), and directly opposite to this is seen the secretion collected and infiltrated with leucocytes outside the mouth of a gland, a condition frequently seen in the menstruating uteri of women and rabbits, and, we suppose, in other mammals.

Fig. 16 shows an invagination forming a superficial gland in the calcium chamber through the epithelial cells of which leucocytes may be seen passing. Fig. 17 illus-

Fig. 10.—(× 1200.) Menstruating rabbit's uterus showing glandular activity.

trates the vascularity and 'diapedesis' which is seen in these *rugae* when actively engaged. Figs. 15 and 17 were taken from a hen while an egg was in the process of being coated with lime salts.

Since it has recently been established by Heape[7] and others that the pro-oestrum stage of the "rut" in animals *is* really analogous to the human menstruation, these facts are of considerable importance, and we think sufficiently demonstrate the cause and effect we wish to emphasize.

There are, however, a few other points which must be considered in order to get on to *terra firma*, and into a region from which we can glean facts of importance from a clinical point of view. In the first place, let us briefly consider the periodicity of menstruation and its significance. From the very earliest times this periodicity has been the subject of much mystery, more speculation, and not a little unconscious humour. As a result the periodicity has been allowed to form the chief stumbling-block to a solution of the problem which has been so long *sub judice*.

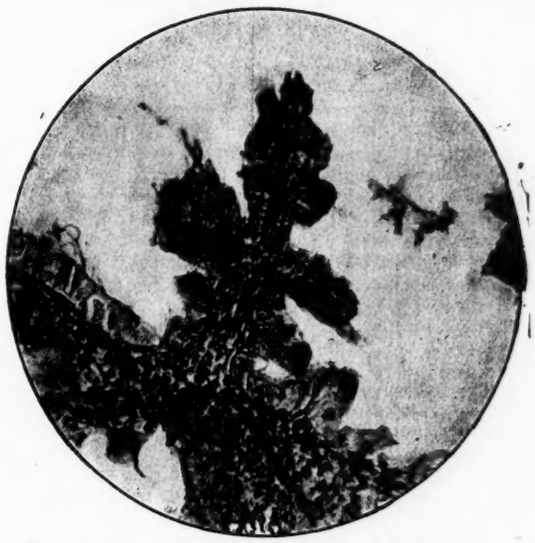

Fig. 11.—(×1200.) Menstruating woman's uterus showing glandular activity.

And yet after all there is no mystery, nor is there anything supernatural or obscure about what regularity there may be in the appearance of the catamenia. We have ceased to wonder at the rhythm of respiration and cardiac contraction—we now know that the basis of all the causative factors is founded upon chemical changes—anabolic and katabolic in nature—and that these changes themselves are entirely dependent for their regularity upon the

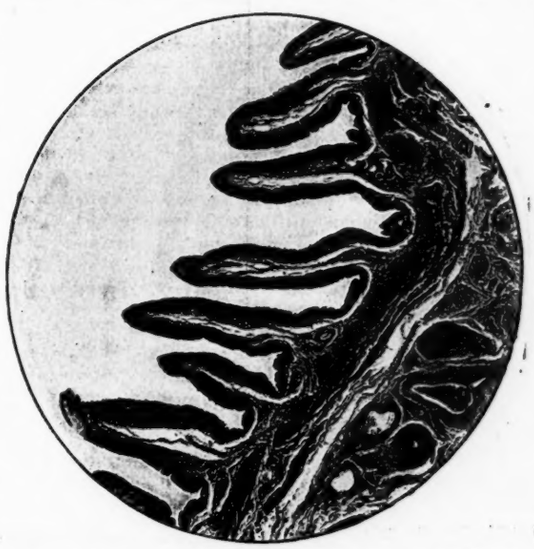

Fig. 12.—(×250.) Calcium-secreting chamber of a on-laying hen.

general metabolism in whole or in part. However little understood or insufficiently explained there is little doubt that other factors are merely correlated.

The periodicity of the menstrual function—of the "rut" and breeding in animals—is exactly on the same lines. Merely a question of whether or not certain necessary articles—among them calcium—are at the disposal of the organs concerned for excretion at certain times. To some extent Stevenson[8] argued on the same lines in discussing his "menstrual wave" theory in very general terms. This

periodicity has really no immutable law of a fixed time, as one might be led to think by the way some authorities have written of it. It is subject to many influences, for the individual has first claim upon all ingredients necessary for herself before she has any to spare for excretion—that is, for supplying a fresh individual (her embryo) or for menstruation. These influences, apart from pregnancy,* are seasonal and climatic, dietetic and hygienic. How important they are can be gauged by the effect evolution

Fig. 13.—(×250.) Calcium-secreting chamber of a laying hen.

has had, or even by the effect domestication has upon the habits of wild animals and civilization upon the human race.

The periodicity of the catamenia is, then, merely the result of a concomitant series of metabolic processes—such as are seen in other spheres of physiological activity—which may or may not allow of regular menstruation. We do not think we need go further into this point; it

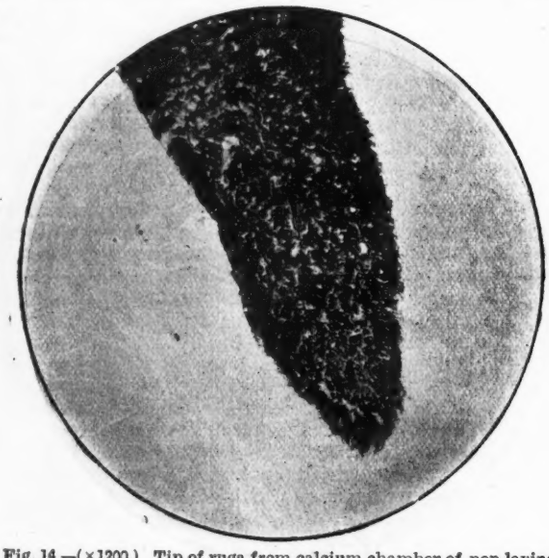

Fig. 14.—(×1200.) Tip of ruga from calcium chamber of non-laying hen.

seems to us to be very obvious, and if viewed in this light makes a strong argument for our ideas concerning this influence of the calcium salts in particular.

As already mentioned, we have come to the conclusion that the calcium metabolism is largely influenced by the secretions of the ductless glands, and it may be worth while, therefore, to mention briefly the part which these secretions may play in the economy of this function. In the first place, let us point out that clinically we have used the calcium salts with very good results in the following classes of cases:

1. *Amenorrhoea* from general debility of a chronic nature, but more especially that resulting from acute diseases, such as influenza, in which the exhibition of

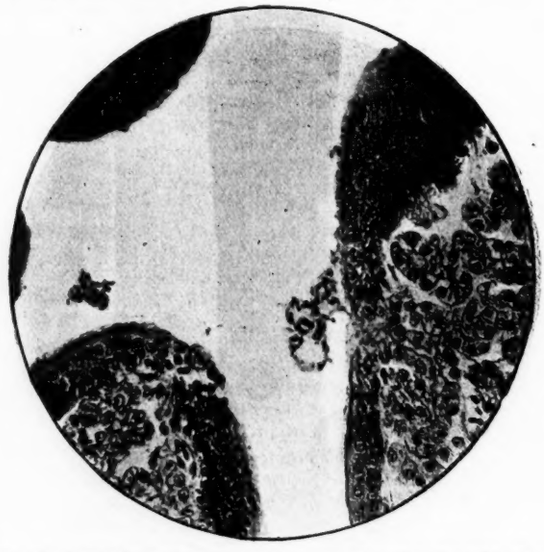

Fig. 15.—(×1200.) Rugae from calcium-secreting chamber of laying hen.

calcium (in doses of 30 grains of calcium lactate every other day) not only relieves the amenorrhoea but also the symptoms ("nervous headaches," etc.) associated with the debilitated state of the patient.

2. *Menorrhagia* due to what are called "constitutional" conditions; that is to say, where there is no local pathological manifestation. We explain this paradoxical position in regard to amenorrhoea and menorrhagia in the

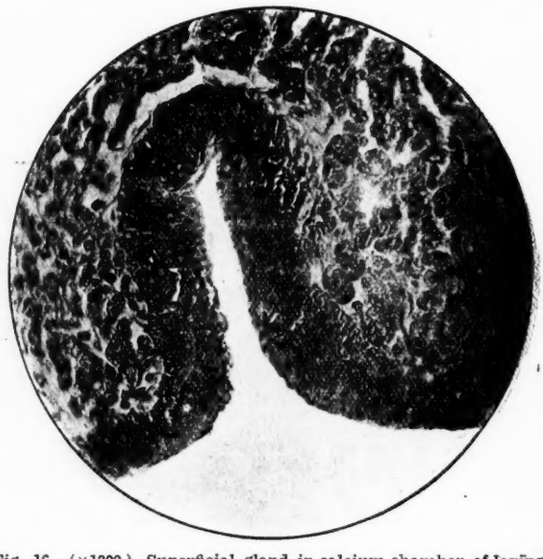

Fig. 16.—(×1200.) Superficial gland in calcium chamber of laying hen.

following way: In the first class of cases there is not sufficient calcium at the disposal of the economy for menstruation, and in the second, that though there is enough for menstruation the blood content does not rise rapidly enough to stop the flow.

Now, it is a matter of common observation that, in young girls especially, the thyroid enlarges in the majority of cases just before the onset of menstruation—that is to say, when the blood calcium content is high. With the enlargement the onset of bleeding soon follows. Inci-

* The interesting fact, which has been overlooked or underestimated by most students of menstrual periodicity, of repeated oestrus (every fortnight in rabbits) in unimpregnated animals is surely comparable to the monthly menstruation of non-pregnant women. That this condition is not more frequently observed in animals is due to the promptness with which impregnation usually occurs.

dentally, it may be mentioned that a similar enlargement of the gland occurs *early* in pregnancy, when the menstruation is suppressed, and before the fetus can utilize the amount of calcium at its disposal in the blood. We have also observed this thyroid enlargement in artificial menopause.

The function of the thyroid secretion in this respect is to stimulate calcium excretion, which may take place from the uterus, or, failing that, from the kidneys or by the bowel. In this way thyroid may be a valuable drug—indeed, it has often been so used—in amenorrhoea.

In the same way, we believe that the internal secretion of the ovary has the property of depleting the blood and tissues of calcium salts, and possibly a special action in stimulating excretion by way of the uterus.

We have in opposition to these the secretion of the adrenals, and probably that also of the pituitary gland. Both, as will be shown in a subsequent paper, act in a similar manner upon the uterus, especially when in the pregnant state. But, as regards their influence upon menstruation, the extract of these glands assists in the production of uterine contractions which are marked at that time, and also in other more obscure ways from their relationship to calcium metabolism in general, and in particular that of menstruation.

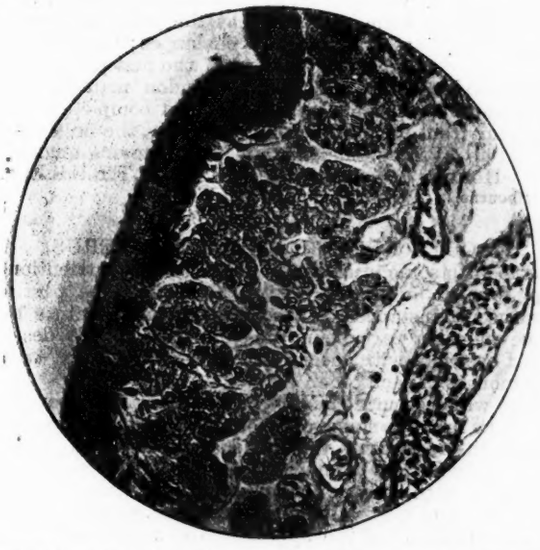

Fig. 17.—Vascularity and diapedesis in calcium chamber of laying hen.

Further, with regard to the secretion of the pituitary body—for we have at present little direct clinical evidence in regard to the adrenals—it has been shown that tumours of, and in the neighbourhood of, the pituitary gland cause amenorrhoea, and that cessation of the menses is one of the earliest symptoms of acromegaly.[9] It has also been shown that sexual infantilism with an absence of menstruation is a general complication in early disease of the pituitary gland.[10] An analysis of about 150 cases of acromegaly recently made confirmed the above statement regarding amenorrhoea, and also that lactation hastens the progress of the disease.[11]

CONCLUSIONS.

1. That menstruation is a periodic function only in so far as the calcium metabolism is in harmony with this periodicity, and that the function is dependent upon the calcium metabolism in all its ramifications.

2. That the haemorrhage into the Graafian follicle may be coincidental, and is probably the result of the lowered coagulability of the blood or vasomotor changes; but that rupture of the follicle is in no way responsible for menstruation.

3. That the bleeding from the uterus, while due to the lowered coagulability of the blood in part, is also dependent on the local changes in the capillaries from which the diapedesis of leucocytes and corpuscles occurs; and, further, that these leucocytes are an active factor in the conveyance of calcium salts from the glands to the exterior.

4. That the uterine glands excrete calcium and mucin, and that therefore the uterus is a "menstrual organ."[12]

5. That there is a correlation between the ovaries and uterus in reference to menstruation, but that the ovary is probably no more predominant than other ductless glands in this respect.

6. That menstruation *per se* is not a necessary adjuvant nor concomitant to fertility and reproduction.

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OBSERVATIONS ON PLEURAL PAINS AND ADHESIONS.

By JOHN T. MACLACHLAN, M.D.,

ASSISTANT PHYSICIAN, GLASGOW ROYAL INFIRMARY.

EVERY physician is called sooner or later to treat cases of phthisis pulmonalis, which, notwithstanding all the methods of treatment introduced since Koch announced his brilliant discovery of the tubercle bacillus in 1882, still remains one of the most deadly diseases known. The disease is undoubtedly curable in its early stage; but that stage is only too frequently allowed to slip past, ere the patient, his friends, and perhaps his medical adviser, realize the exact position of affairs.

Clinical observation warrants, I think, the conclusion that phthisis pulmonalis may begin in one of three ways: Firstly, as pleurisy; secondly, as bronchitis; and, thirdly, as a caseating pneumonia, or the deposition of tubercle in the substance of the lung with bronchopneumonia. The second and third modes of origin are well recognized, but the first is not sufficiently appreciated.

Patients often complain of shooting or darting pains in the chest long before tubular breathing or expectoration reveals the presence of serious mischief in the lungs. These darting pains are too often ascribed to what has been called pleurodynia or intercostal neuralgia, because no physical signs have been discovered to denote the presence of pleurisy. I assert, after four years' careful observation, that the so-called pleurodynias are in reality localized patches of pleurisy, and I infer that they are mostly, if not always, of tuberculous origin. These sharp pains in the chest come on suddenly, without reference to wind or weather. I do not wish to deny that rheumatism may attack the pectoralis major or the latissimus dorsi; but the pains I refer to are not, in my opinion, of a rheumatic nature.

Of 300 patients who came to the dispensary for advice, 50 complained of sharp pains in the chest. Their ages ranged chiefly from 20 to 40 years; although younger people and older people were not exempt. The pains were referred to certain well-defined regions, namely, where the lungs divide into their lobes, or the free margins of the lungs. Thus, the pains were often referred to the right nipple, either a little above it or below it; to the left border of the heart; frequently to the lower left axillary region, corresponding to the division between the upper and lower lobes of the left lung; and to points a little below the apex of each scapula.

The involved areas may be diagnosed by very delicate percussion, which may be called tactile percussion, as the sense of resistance is strongly appealed to. The ordinary stroke in percussion strikes through those areas of pleurisy patches and brings out lung resonance. The fingers of the left hand are placed flat on the chest. The tip of the middle finger of the right hand is the plessor, and it should not be raised above 1 or 2 in., and then brought down on the surface of the middle finger of the left hand. The percussing finger should be kept at an easy angle, and should move from the knuckle-joint, the wrist being kept steady. If this method of percussion be practised for several weeks or a few months, it will be

possible when percussing a patient's chest to detect or at least suspect areas of superficial dullness where there have been localized pleurisies which have left adhesions as a permanent memorial.

Sometimes patients can corroborate the diagnosis by remembering the sharp pains they felt at the involved sites, and sometimes they do not recollect having any suffering. From this, and for other reasons, I conclude that children often have attacks of pleurisy which are overlooked. Such vestiges of a bygone pleurisy seem to me to occur most frequently low down on the left side, over the axillary portion of the lower lobe of the left lung.

Auscultation is not nearly so valuable as percussion in diagnosing such superficial areas of dullness on the surface of the lung. Occasionally the affected area may not be much larger than a square inch, as I have once verified *post mortem* in a case in which the adhesion was in the vicinity of the right nipple. If the fibrinous exudation is recent, rubbing, grating, squeaking, or creaking sounds may be heard. If the dullness is considerable, the inspiratory murmur may be fairly distinct; and the expiratory murmur faint, and preternaturally short, as compared with that over sound pleura and lung. Probably this indefiniteness of the respiratory murmur may be due to the lung being adherent to the chest wall, and its natural recoil interfered with by the adhesions.

Inspection in well-marked cases of pleural adhesions may show deficient expansion and contraction. It is not practicable to diagnose adhesions in the scapular regions, or even in very obese subjects, except by inference.

The diagnosis of pleural adhesions should be regarded as a danger signal to warn the patient to take all precautions in his mode of life, diet, etc., to ward off the graver manifestations of tubercle in the lung.

The immediate treatment of fibrinous pleurisy consists in the internal administration of sedatives, such as opium, and the use of counter-irritants. These measures will not banish old adhesions, but they relieve recent attacks of pleurisy.

It does not follow because a patient has had an attack of pleurisy that he will fall a victim to phthisis pulmonalis. Indeed, were such the case, every fourth, or at least every sixth, patient would develop the disease. It is the exception rather than the rule. But the two conditions are so frequently found together that they appear to me to have a common origin; and phthisis pulmonalis develops after a history of localized pleurisy so frequently that the latter rises into great significance.

When a patient comes to the dispensary complaining of his chest, I always put the three following questions, and subsequently other questions that arise out of the answers given.

Have you a cough?
Have you any spit or expectoration?
Do you suffer from any sharp pain in the chest, referring particularly to the common sites indicated above?

It is necessary to be wary in inquiring about a cough, as consumptive patients are very shy of admitting a cough, while emphysematous patients are often silent about their morning cough, although desirous of being relieved of their shortness of breath. If a patient complains of having had for a considerable period a cough and spit, without ever having had any sharp stitches about the chest, he is probably suffering from bronchitis. If he complains of cough, spit, and sharp pains in the chest (not the pain at the pit of the stomach due to hard coughing), he has, almost to a certainty, got phthisis pulmonalis. Cancer of the lung, however, is one exception. The cough indicates the presence of a foreign element in the respiratory tract; the sputum, if it be purulent or muco-purulent, points to bronchitis or bronchopneumonia being present; and if the sputum contains little cheesy-looking particles, these will denote that caseation is going on in the lung or lungs; the sharp pains will point to pleurisy, so that the three cardinal signs or symptoms—cough, pain, and expectoration—will in all probability correspond to bronchitis, pleurisy, and tuberculous pneumonia, and, in a word, phthisis pulmonalis.

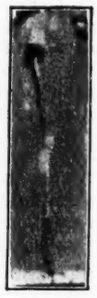
I have pleasure in stating that Mr. E. Wardman Wilbourne, medical student, who has been working with me at the dispensary, has frequently verified the above observations, and agrees with the conclusions drawn.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AVULSION OF A FINGER.

THE following accident appears to me to be sufficiently remarkable, both in the manner of its production and its effects, to be worth recording. The patient, a young man, was indulging in a form of amusement euphoniously entitled by the proprietor "swooping the swoop," a looped metal contrivance running by means of a wheel along an inclined cable. The amusement consists in grasping the horizontal bar of this loop and while thus suspended having an aërial journey along the cable. On reaching the lower end one lets go and drops two or three feet to the ground. The patient had a ring on the little finger of the right hand. On attempting to let go, the stone in the ring, which had slipped round to the palmar aspect of the finger, caught in the junction between the horizontal and vertical portion of the loop, with the result that he was momentarily suspended by the little finger, and the finger was avulsed in the following manner: The bone gave way at the joint between the second and third phalanges; the skin opposite the lower end of the first phalanx and the whole length of the deep flexor tendon, maintaining its attachment to the phalanx, was pulled completely out of the arm from its origin near the elbow, the finger being picked up off the ground with its accompanying tendon.



The finger, with its tendon, shown against a cardboard background.

HORACE P. GODFREY, M.B., B.S.Melb., F.R.C.S.Eng.
Melbourne.

ACUTE INVERSION OF THE UTERUS.

I READ with some interest Mr. Holthusen's contribution to the JOURNAL of January 23rd, as during the past few months two instances of a somewhat similar nature have come under my care, being the only cases of this description I ever met with, occurring, rather singularly, within five months of each other.

One, which occurred in July, 1908, was in a primipara aged 23. The first two stages of labour were normal, but upon its expulsion the placenta was found attached to an inverted uterus, though not technically adherent. It was speedily separated with little or no haemorrhage. There was great disturbance of respiration and circulation, cyanosis, etc., in fact the patient had the appearance of imminent dissolution. On returning the uterus, which was effected with little or no difficulty, the alarming symptoms gradually subsided. The patient, who was a very healthy young woman, made a splendid recovery.

The second case happened in December, 1908, in the second pregnancy of a woman, aged 30, with hip-joint disease and a weak heart. Labour was tedious and recourse was had to instrumental delivery. On some amount of haemorrhage taking place, it was found that the vagina was occupied by the uterus as well as the placenta. The latter was easily removed, but the return of the former to its natural position was an affair requiring the exercise of some care and manipulation. What immediate after-effects there were seemed more attributable to haemorrhage, than to disturbance of the parts. The patient lived six weeks, then died from cardiac debility, anasarca, etc.

Birstwith. H. G. HAROLD CLARKSON.

TREATMENT OF OPHTHALMIA NEONATORUM.

A CHILD with ophthalmia neonatorum runs so many risks from the treatment it receives—at any rate when the treatment is not carried out by experienced hands—that I think the following remarks are in place:

As a rule the mother consigns her unfortunate offspring to the darkest corner of a dark and badly-ventilated room, and covers up its head with a cloth, which is soon contaminated by discharge. Blepharospasm confines the pus in the conjunctival sacs, and renders all manipulation not only difficult but dangerous. A strong solution of silver nitrate is swabbed on the everted lids, causing considerable pain, and perhaps injury to the cornea owing

to the blepharospasm and the desire to reach all the crannies of the conjunctival sacs.

The indications are clear. Light and fresh air must be let into the room, and the child should go out daily. The face must not be covered up; cleanliness must reign supreme. A towel should be kept behind the child's head to receive any discharge, and must be frequently changed. The nurse must wash her hands before and after the dressing. If the child's hands wander to the eyes they must be fastened down by a safety-pin through the sleeve.

To overcome the blepharospasm an external canthotomy should *always* be done. This simple operation is performed by inserting one blade of a blunt-pointed pair of scissors into the conjunctival sac at the outer canthus and with the other blade external cutting horizontally outwards. The orbicularis palpebrarum is divided, the palpebral opening enlarged, the lids can be easily and safely everted, and the conjunctival sac washed out.

Instead of silver nitrate solution I use argyrol in the strength of 25 per cent., and the nurse is instructed to drop one drop into each conjunctival sac every quarter of an hour during the day—once or twice during the night. Any discharge is washed away from the lids as soon as it collects with a weak antiseptic solution, such as solution of potassium permanganate (1 in 10,000), and three times daily the conjunctival sacs are washed out with the same solution, just sufficient lotion being used to remove any visible discharge. If there is the slightest haziness of the cornea, atropin is instilled once daily. The points to be emphasized are:

1. Cleanliness, fresh air, and light.
2. External canthotomy always to be done.
3. Argyrol, 25 per cent., one drop every quarter of an hour.

In Berlin the use of silver preparations has been in some quarters given up entirely in ophthalmia neonatorum, and a 10 per cent. ointment of aluminium acetate inserted between the lids hourly with good results, but I have as yet had no experience with this.

Oldham. W. DUNCAN LAWRIE, M.D.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

FRENCH HOSPITAL, LONDON.

CARCINOMA OF CERVIX: HYSTERECTOMY, NEPHRECTOMY: RESECTION OF SMALL INTESTINE: RECOVERY.

(Reported by Mr. KENNARD, F.R.C.S.Edin., late House-Surgeon to the French Hospital.)

[Under the care of Dr. SUNDERLAND, Mr. EDMUND OWEN, and Mr. CLAYTON-GREENE.]

MADAME M. was admitted on October 3rd, 1907. She gave a history of a miscarriage three weeks previously and of occasional attacks of bleeding since then. She had had two children, the last two years previously.

On examination, a cauliflower growth of the cervix uteri was found invading the right fornix. The uterus was not enlarged, and it was freely movable.

Mr. Owen operated on October 15th, the patient being in the inverted position. The right ureter was involved in the growth and could not be separated from it. It was, therefore, cut across a little above the mass, and the lower end was taken away with the uterus and its appendages.

The renal end of the ureter was then drawn down and implanted into the side of the bladder, being secured to the fibro-muscular coat by several fine sutures. Further, in order to keep it well drawn down, so that there might be no strain on the point of union, it was fixed to the sheath of the psoas by a couple of sutures. But in case of the implantation proving unsuccessful, a rubber drainage-tube was passed along the side of the bladder and brought out by the vagina. A gauze wick was left in the upper part of the abdominal wound. For five days everything seemed to be going well, but there was then an escape of urine on to the abdominal dressings, and next day urine was found passing by the vaginal wound. The woman seemed, however, quite comfortable. In due course the abdominal wound entirely healed. Except for the vaginal leakage she was in fair condition, and on November 10th she was sent to the convalescent home at Brighton, there being still a leakage by the vagina. On her return three weeks later she said that she felt quite well except for the leakage. Cystoscopic examination showed the left ureter working well, the right being absent. The removal of the right kidney was advised, but this she declined.

It was unfortunate that the implanted ureter failed to take up an attachment to the bladder. Everything was arranged towards this, but notwithstanding, after, apparently, a certain amount of hesitation, the ureter "carried away."

By the following March, however (1908), she had grown so weary of the leakage that she willingly came in for the nephrectomy. This was done, and an uninterrupted recovery was the result. The kidney was found soft; the pelvis and ureter were dilated. She made a rapid and complete recovery.

On April 11th the woman was readmitted, suffering from chronic intestinal obstruction, with marked peristalsis of the small intestine. It was thought that this was probably due to adhesions having formed between the small intestine and the uterine stump. The symptoms becoming very acute, and Mr. Owen being absent, Mr. Clayton-Greene operated on April 24th, making an incision through the right semilunar line. On exploring the abdominal cavity, a hard lump was felt in a coil of small intestine; this was brought up to the surface, and was found to be a mass of new growth of the size and shape of a moderate-sized Murphy's button. The intestine was much distended. It was not thought safe to excise the growth without providing efficient drainage. A lateral anastomosis between the two arms of the loop was therefore performed well away from the growth, and the mass was then protruded through a separate opening in the loin, the anterior wound being closed. The segment of bowel containing the malignant growth was then excised, and a Paul tube was inserted into the proximal piece of intestine, the distal end being closed. No enlarged mesenteric glands were discoverable. The intestine drained freely through the tube, and before long the lateral anastomosis became functional, and the discharge of faecal matter was reduced to an occasional stain on the dressing. The anterior wound healed by first intention, and the opening in the loin gradually closed.

The object in performing the operation in this manner was to avoid the risk of suturing the intestine while in a distended state, without at the same time providing adequate drainage; it was also thought better to complete matters, if possible, at one operation, rather than to be compelled to resect an artificial anus subsequently, having regard to the previous surgical experiences of the patient. The woman reported herself at the hospital in January last as being in perfect health and as having increased considerably in weight.

Histological Examination.—Dr. B. H. Spilsbury states that the growth is a squamous-celled carcinoma in the submucous coat of the intestine, "which is suggestive of its being secondary to the uterine tumour." This report is in accordance with the opinion formed at the time of the operation. It might have been expected that such a growth would have arisen rather by implantation on the peritoneal surface, but this certainly was not the case. The tumour in the intestine was freely movable in the abdominal cavity, and it bore no relation to the uterine region. The peritoneal coat was not involved, except where it was puckered at the actual site of the stricture. Moreover, the report states that the growth apparently started in the submucous coat of the intestine. Such a secondary growth, presumably the result of a vascular metastasis, must be of rare occurrence, and the fact that up to the present no other secondary deposit has been observed makes the condition still more interesting.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, March 1st, 1909.

Sir FELIX SEMON in the Chair.

Functional Disorders of the Stomach.

DR. SIDNEY MARTIN delivered the third of the Lettsomian Lectures for 1909. Dealing with the treatment of functional cases, he said that in cases of hyperchlorhydria it was essential to give rest to the stomach by prescribing a non-irritating diet, by giving bodily rest—in the milder cases only after meals, but in the severer cases the rest must be complete and in bed. The increased acidity must be counteracted by alkalis, the best of which was bicarbonate of soda in 15 to 20 grain doses given half an hour after meals. But that alkali acted best in such cases when given with sedatives such as diluted hydrocyanic acid in 3 minim doses, and liquor morphinae hydrochloratis in 5 to 10 minim doses. Extract of cannabis indica in ¼-grain doses and glycerine of carbolic acid in 10 minim doses also acted as sedatives, but were not so useful as the two first mentioned. When the symptoms produced by hyperchlorhydria were severe, lavage once daily for a week was highly beneficial. In cases where there was a great deficiency of secretion the treatment was somewhat different from the foregoing. In those cases rest was essential, and in all of them rest in bed for a period of five, six, or seven weeks. Without that rest no other treatment was curative. The diet must be an easily digestible one, and it was best to begin the treatment with a diet of citrated milk, gradually increasing the food by bread and butter, eggs, fish, chicken, mashed potatoes, until an ordinary diet was reached. That graduated diet was highly beneficial in such cases. It might be considered that drugs to stimulate the secretion of gastric juice would be highly beneficial in such cases, yet it was very difficult to say what drugs did stimulate the secretion of gastric juice and what were beneficial in those cases. Bicarbonate of soda in 5 grain doses stimulated the secretion. Small doses of nitro-hydrochloric acid combined with nux vomica or strychnine certainly did good in many cases. Sometimes the acid mixture was best given with one of the gastric sedatives previously mentioned, but in many cases where drug treatment seemed to be of no avail, lavage daily for a fortnight, and then at longer intervals, appeared to be the best treatment. It acted in two ways: first, by preventing further damage to the stomach function by removing the retained food; and, secondly, by stimulating the mucous membrane to secrete. The best solution to use for lavage was water containing a drachm each of bicarbonate of soda and common salt to the pint, two pints being used and the lavage being done at night. Of the foods which stimulate the secretion, carbohydrates, proteids and meat extracts were the best; fats did not stimulate the secretion. In cases associated with rapid expulsion of food from the stomach, sedatives were the most useful drugs for treatment. In cases of dilatation, besides the general treatment above mentioned, lavage was highly beneficial. Strychnine was also a useful drug given in moderation, more, however, for its general tonic effect on the nervous system than for any special effect on the stomach itself. Both those modes of treatment were very useful with well-marked dilatation. Massage of the stomach from left to right helped in cases of dilatation, as well as exercises done regularly every day, but he had not himself found that the application of electricity had any beneficial effect in such cases. Cases of nervous dyspepsia were very often treated with success by regulating the diet and mode of life, and giving a sedative alkaline mixture alternatively with a stimulant such as strychnine. Potassium bromide and valerian were also useful. Patients, however, might be quite intolerant of drugs, and it was impossible to lay down any general rules for the treatment of such cases. They had to be treated on their own merits. One case might be benefited by rest in bed, massage, and diet—a treatment which in another case might lead only to an aggravation of the symptoms. Other cases were treated by removal to other surroundings and by leading an open-air life. The cases which showed extensive vomiting and flatulence were often well treated by means of lavage, but even in cases of vomiting lavage might be unnecessary. The prominence of reflex symptoms demanded treatment by rest more than the predominance of stomach symptoms. One important point in the treatment was that no few weeks' treatment was of any avail in such cases, if pronounced. The treatment regulating the mode of life might have to be continued for two or three years for any real benefit to be obtained.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Friday, February 19th, 1909.

Sir PATRICK MANSON, K.C.M.G., M.D., F.R.S., in the Chair

Bronchial Spirochaetosis in India.

DR. H. G. WATERS read a paper on a species of spirochaete which he had found associated with a form of bronchitis in India. The first instance of the infection he had seen was at Tundla, in the United Provinces, where a European was admitted to hospital last year with a temperature of 104°, a cough, and a copious expectoration of bronchial mucus. No malarial parasites were present in the blood; and although a few rhonchi could be heard over the chest, no tubercle bacilli or other bacteria were found in the sputum. In looking for organisms, however, he discovered large numbers of what he thought a new variety of spirochaete. The temperature remained continuously high for three days, and fluctuated between 102° and 104.5°. He did not at first attach pathogenic significance to the spirochaetes, and attributed their presence to oral sepsis; but, on examination, they could not be found in swabs from the mouth, and there was no evidence of stomatitis, nor, in fact, any local condition to which the spirochaetes could be related. After three or four days the temperature fell to normal, and the spirochaetes disappeared from the sputum. Fourteen days afterwards, a relapse occurred with marked bronchial symptoms and similar spirochaetes reappeared in enormous quantities in the sputum. A single case, of course, furnished insufficient evidence on which to base a claim to pathogenicity; but its importance was very much increased by the fact that in the course of the next few days he saw seven more instances in the same district, in which the symptoms were exactly reproduced. The co-ordination of the clinical signs exhibited by each patient with the appearance of the spirochaetes in the sputum he thought was significant of a specific infection, and he submitted that a case for inquiry had been established. Dr. Waters's paper was illustrated by microscopic preparations of spirochaetes in sputum.

DR. C. W. DANIELS said that the important point about Dr. Waters's paper was the fact that the peculiar symptoms had been seen in a number of cases. One saw spirochaetes in so many non-pathogenic discharges and exudates that there was rightly a good deal of scepticism about their pathogenic function. It might well be that spirochaetes in sputum were accidental parasites of enlarged and unhealthy bronchi; but the fact that there was a definite type of illness, and especially that there was a series of cases in which they occurred, was interesting and suggestive.

Dr. G. C. LOW agreed with the last speaker. The pathogenicity of spirochaetes was difficult of proof because they could not be reproduced in cultures. Had Dr. Waters looked for pneumococci as well as for other organisms associated with lung trouble?

DR. WATERS, in reply, said that he had found no pneumococci in the sputa. There were, of course, the usual septic bacteria, but in his cases the sputum was always characteristic so far as regarded the spirochaete, and the possibility of the organism being pathogenic he had accepted only after very careful consideration.

Endemic Disease in Barbados.

Dr. T. FAUSSET MACDONALD communicated several notes on tropical diseases in Barbados, in which he said that for a tropical station the island was generally supposed to be exceptionally healthy. No doubt there was much truth in that statement, but there were elements of doubt. One important question was whether yellow fever ever occurred in Barbados. Medical opinion was divided about a class of cases in which there was high fever, occasional black

vomit, and other serious symptoms. Some considered the disorder to be true yellow fever, others thought it was epidemic icterus, while others again believed that it was nothing but severe influenza complicated with jaundice. Still another disease about which there was great uncertainty was an affection which was diagnosed by some authorities as sprue and by others as pellagra. It had been called psilosis pigmentosa, but he himself believed it to be pellagra.

Dr. G. C. LOW agreed that the cases spoken of by Dr. MacDonald were pellagra; they were certainly not sprue, and they had little resemblance to that disease. Yellow fever was notoriously difficult of diagnosis. It might be almost impossible to differentiate it from malignant malaria, which was often complicated by haemorrhages from the stomach and intestines. Severe, and even fatal, cases of obstructive or idiopathic jaundice were common in the West Indies, but he himself had never heard of epidemic jaundice in Barbados.

Yellow Fever in Brazil.

Dr. E. RIBAS, Director of the Sanitary Department of San Paulo, Brazil, read a paper in which he stated that an extensive series of experiments at San Paulo had fully proved the accuracy of the work of the American investigators in Cuba. There could now be no further doubt that yellow fever was propagated by *Stegomyia fasciata*, in all probability by *Stegomyia fasciata* only, and that fomites or other agencies had no influence in disseminating the disease. In one experiment which he made he procured larvae of that mosquito at San Paulo, the city being then quite free from yellow fever, and sent them to a centre where the disease was raging. The mosquitos hatched from the larvae were allowed to suck blood from a patient there who was seriously ill with yellow fever, and were then brought back—360 miles—to San Paulo, where they were induced to bite six healthy persons, of whom he himself was one. In three instances there was no result, but in the other three typical symptoms of yellow fever developed. It was important to note that of the three people who resisted the disease successfully one was himself, and the other two were medical men who had been associated with him in dealing with many epidemics of yellow fever in San Paulo. The three patients in whom yellow fever developed were Italian immigrants who volunteered for the experiment, and happily their infections were not malignant. He believed that as they had just arrived from Europe they were, for that reason, less immune than old and seasoned residents. In all the cases there was an incubation period of sixteen days. Dr. Ribas illustrated his paper by lantern slides showing the mortality from yellow fever in various towns in Brazil, and proving that in every instance epidemics had been stamped out by the rigorous extermination of mosquitos and the simultaneous adoption of general sanitary measures.

Dr. LOUDON STRAIN said that he could personally confirm everything that had been said by Dr. Ribas. The mortality in Santos and San Paulo before mosquitos were known to convey the disease was appalling; but, since the campaign against yellow fever had been undertaken on scientific lines, the cities of Brazil had entered on a new era of prosperity. In Rio, Santos, and San Paulo—all of which were, formerly, terribly insanitary—the public health might now be described as satisfactory.

Dr. C. W. DANIELS said that these results were striking, but, although he did not doubt the influence of *Stegomyia* in the spread of yellow fever, he would point out that in British Guiana, where no systematic attempts had been made to exterminate mosquitos, yellow fever had spontaneously disappeared. General experience led to the belief that, during a period of about thirteen years, there was comparative immunity from epidemics of yellow fever, but at the end of that time the disease broke out anew, and raged for two or three years, until it exhausted the susceptible individuals in the community. He thought the same belief was current in Barbados and other West Indian islands.

Dr. C. F. HARFORD asked why Dr. Ribas classed as immune individuals who had not themselves suffered from yellow fever. Did residence in a city where the disease was prevalent confer immunity?

Sir PATRICK MANSON said that these facts possessed much interest and importance. One peculiarity of yellow fever was the immunity of the Creole. We knew why natives of the tropics were immune to malaria: they suffered from the disease as children. Was this paralleled by yellow fever? If so, it followed that that disease must be endemic.

Dr. RIBAS said that the susceptibility of new arrivals was undoubted, but it was difficult to explain. Immigrants arriving at Santos in the yellow-fever days were hurried through the port so as to get them as quickly as possible to their destination; but a stay of four or five hours in Santos was often sufficient for infection. This preference might be accounted for partly by the fact that mosquitos bit blacks much less freely than new arrivals; but it was also true that the natives had no immunity as regarded other diseases. For instance, epidemics of cholera had generally been more fatal to blacks than to the European residents in Brazil.

ROYAL SOCIETY OF MEDICINE.

MEDICAL SECTION.

Tuesday, February 23rd, 1909.

T. H. GREEN, M.D., F.R.C.P., in the Chair.

Chloroma.

DR. DE HAVILLAND HALL and Dr. HEBB presented a communication based on a case of chloroma which had been in the Westminster Hospital.

The patient was a girl, aged 4 years and 3 months. The illness commenced one month before admission with irritability and pain in the head. A fortnight later a lump developed on each side of the neck, the eyes became more prominent, and the veins over the temporal region were distended. On admission, in addition to the above, there was facial paralysis on the right side, and the patient was very anaemic. On December 12th, double optic neuritis was noted. The patient gradually became weaker and more anaemic and died on December 24th, 1907. The blood was examined on five occasions. On admission, red corpuscles 4,100,000, leucocytes 40,600, 85 per cent. of which were monomorphonuclears. Haemoglobin 60 per cent. The day before death red corpuscles were 1,140,000, leucocytes 23,900, equally divided between polymorphonuclears and monomorphonuclears, and 12 per cent. of eosinophilous myelocytes. The haemoglobin had fallen to 18 per cent. As was usual in these cases there was nothing characteristic about the temperature chart; there was usually slight pyrexia, the highest temperature recorded being 102.4° F. Arsenic and iron were given without influencing the course of the disease.

The diagnosis was based on the anaemic appearance of the child, the masses in the temporal region, which even during life had a greenish tint, and the protrusion of the eyeballs. The examination of the blood also helped to confirm the diagnosis, as there was a leucocytosis affecting the large lymphocytes. At the necropsy chloroma growths were seen in the ethmoidal region, in the middle fossa, near the end of both lateral sinuses, in the orbits, and in the dura of the vertex. In the trunk chloromatous tissue was found on the internal aspects of all the ribs, the innominate bones and sacrum, and on the external surface of both scapulae. The long bone examined was exempt. All the growths were of an olive-green colour. The liver, spleen, and heart gave a slight iron reaction. Microscopically the growth was a small to a medium-sized round-celled sarcoma. The effect of several reagents on the pigment was tested, but the only one which had a definite solvent or decolorizing action was 0.2 per cent. KOH, which was allowed to act for eighteen hours at 37° C. Special examination was made for the presence of bacteria, but none were detected.

Dr. A. E. GARROD said that cases of sarcomatous growth in the orbit in children associated with sarcoma of the suprarenal capsule presented features similar to those of chloroma. The pigment resembled the lipochromes rather than any derivative of blood pigment.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—At a meeting held on February 12th, Dr. E. SERGEANT, President, in the chair, Dr. F. H. COUTTS, on behalf of the North-Western Branch, presented to the society a framed portrait of Dr. Francis Vacher, who occupied the Presidential chair in 1895. Dr. T. H. C. STEVENSON read a paper upon the *Administration of school medical inspection*, with especial reference to county areas. After describing the routine provision which should be made for the actual inspection, he urged that it was important to interest the teachers in

the work, even though their assistance was not sought. He described the system recently adopted in Somerset for the inspection of the eyes of children whose vision was below $\frac{6}{9}$. A full-time officer had been appointed, who would undertake the ordinary routine inspection in a district, but his services would be available as "school oculist" for the whole county. The gentleman appointed had had considerable experience in ophthalmic work, and this fact was taken into consideration in determining his salary. Eye-testing centres were being established in different parts of the county to which it was hoped the children to be examined would be brought. The oculist, when he examined, would, if necessary, prescribe spectacles, and these were to be supplied at a low rate by the County Council, though in special cases no charge would be made. Dr. Stevenson recommended the provision of a separate weighing machine for each school, and he expressed the opinion that in the long run this would be less costly than paying for the cartage of a machine from one school to another. He considered that there was little or no necessity to duplicate the record cards, the individual normal card was of very little interest and not likely to be referred to. He urged the necessity for proceeding with the tabulation of the results steadily during the year, so that the annual report could be built up in sections and results could be obtained at shorter intervals with comparative ease. He suggested that the best place to keep a record of the infectious illnesses was in the school register. By the addition to it of five narrow columns the teacher could record with very little labour the illnesses which the children were known to have had. Dr. BARWISE said that it was a great advantage to have the children taught to breathe properly. In one district of which he knew, and where the children had been taught the proper method of mouth breathing, there was a noticeable absence of adenoids and of enlarged tonsils. Mr. F. E. FREMANTLE considered that it was important to record the presence of a parent at the inspection in order to know at a subsequent inspection whether directions had been given at first hand. He advocated the employment in each village of a nurse-midwife. Dr. J. T. C. NASH endorsed the latter suggestion, and thought funds might be provided for her support on the provident dispensary principle. Dr. BUTCHER said that he obtained a great deal of assistance from the teachers, especially as regards the clothing and cleanliness of the children, for the latter often came specially prepared for the inspector's visit. Dr. KERR hoped that the inspections would not develop into a mere collection of statistics, for if they did the work would not be worth doing. He considered that the inspectors must have assistance from the teachers, and he suggested the appointment in the infant schools of a person who would be more of a nurse than a teacher, but whose services would be available in the upper schools when the inspector made his periodical visits. Dr. W. BUTLER thought it would be a pity if any doubt were cast as to the necessity for the examinations. He agreed that it was quite unnecessary to duplicate the cards, and feared that the work might be handicapped by the unnecessary clerical work which was being adopted in some districts. The PRESIDENT referred to the insanitary surroundings of many schools, and thought that more attention should be paid to the lessening of the commoner preventable diseases.

CLINICAL SOCIETY OF MANCHESTER.—A meeting was held on February 16th at the Onward Buildings, Deansgate, the PRESIDENT (Dr. J. J. COX) in the chair. Dr. CHRISTOPHER HEYWOOD opened a discussion on *Whooping-cough*. In the course of his remarks he laid great stress on the value of fresh air in the treatment of this disease, and expressed the opinion that but little reliance was to be placed on drugs. The following gentlemen took part in the discussion: Drs. HUTTON, MUMFORD, MARSDEN, VIPONT BROWN, WILKINSON, LAPAGE, P. R. COOPER, BROADBENT, LARKIN, PRICE-WILLIAMS, SAVATARD, and the PRESIDENT.

THE next meeting of the French Congress of Medicine will be held in Paris in 1910, under the presidency of Professor Landouzy. The questions proposed for discussion on the official programme are: (1) Bradycardia, (2) the relations of the liver and spleen in the pathological state, (3) the treatment of symptomatic epilepsies.

Reviews.

PHYSIOLOGICAL PRINCIPLES IN TREATMENT.

AMONG older practitioners of medicine the complaint is often made that the elaborate researches in physiology and physiological chemistry of the last decade are of little service at the bedside. The application to the needs of the patient of the new knowledge acquired in the laboratory is often disappointing, but it is probable that the fault lies for the most part in its misapplication from want of thorough understanding.

In a useful work on *Physiological Principles in Treatment*,[1] Dr. LANGDON BROWN has sought to show to what extent the newer knowledge can be utilized with benefit and in what directions it still needs extension and confirmation.

Organotherapy first claims attention, and the physiological properties and therapeutic values of iodothyrin and adrenalin and of extracts of most of the organs of the body are in turn examined. The term "hormone," as indicating a substance normally secreted by a healthy organ and destined to exercise a stimulating effect upon some other organ or system, must now be accepted in medical nomenclature, but among hormones there is none as yet known which exercises so powerful an influence upon the treatment of disease as the normal secretion of the thyroid. The limitations to the use of adrenalin and others are many, and their employment demands caution.

In the rational treatment of gastric disorder there is abundant scope for the application of recent knowledge. The convincing demonstrations of Pawlow have proved the immense influence of the mental processes over gastric secretion, and have opened the way to further discoveries as to the adaptation of secretion to requirement throughout the alimentary canal. The study of gastric and intestinal chemistry proceeds apace, but results must needs be incomplete so long as the psychic element remains unknown.

Purin bodies and their influence upon the healthy organism are closely considered, and the author deals gently with the anti-uric acid enthusiasts on the one hand, and those who attach little importance to it on the other. That the liver, and not the kidney, is the offending organ when the normal output of uric acid is disturbed has been abundantly shown.

The subject of occasional albuminuria is one of constant interest, and much space is devoted to it. Its cause is to be sought for either in defective vasomotor control or in haematogenous irregularity.

The vexed question of the cardiac rhythm is once more enunciated, and the opinions of many observers are quoted, but the practical difficulties of treatment remain as great as ever, since every case of heart disease is complicated in unequal degree by morbid conditions in other organs. An account of the part played by calcium in the body and of the work done by Sir A. E. Wright and his pupils, concludes a book which should be of special interest to those who desire to keep abreast of recent investigations and modern views. Being somewhat overladen with references to inconclusive observations, it would doubtless gain in simplicity and clearness if the links in the chain of evidence were more clearly defined, and only such observations were quoted as have withstood the test of time or have been accepted by recognized authorities. As a refreshing proof of the vigour of modern energy and ingenuity in research and of its increasing influence upon practical medicine the book deserves a cordial welcome from those for whose enlightenment it has been written.

LOGIC IN MEDICINE.

DR. BIEGANSKI'S book on medical logic,[2] which Dr. FABIAN has translated into German from the second original edition, contains some suggestive bits of criticism. Protesting

[1] *Physiological Principles in Treatment.* By W. Langdon Brown, M.D., F.R.C.P. London: Baillière, Tindall, and Cox. 1908. (Cr. 8vo, pp. 351. 5s.)

[2] *Medizinische Logik: Kritik der aertzlichen Erkenntnis.* Von Dr. W. Bieganski. Autorisierte Übersetzung nach der zweiten Original-Auflage, von Dr. A. Fabian. Würzburg: Curt Kabitzsch. 1909. (Roy. 8vo, pp. 238. M. 4.50.)

against the abuse of the so-called scientific hypothesis in medical literature, he writes:

The confusion of hypotheses with facts and the exposition of the facts in the light of explanatory hypothesis is responsible for the rapidity with which our present textbooks and medical treatises become out of date. In science only facts and generalizations which are based upon them are stable; hypotheses change, and often very speedily. If we display our facts in the light of current hypotheses, the overthrow of the latter destroys the entire value of the book. It is for this reason that our modern medical textbooks often lose their entire value within a few years. This would not be the case if strict regard were paid to the difference between what constitutes a *de facto* advance in scientific achievement and what is merely a theoretical surmise; the significance of the work as a record of facts would then retain a permanent value. Take as examples the old textbooks of Stokes, Trousseau, and Griesinger; even at the present day these may be re-read with great profit, owing to their wealthy material of clinical facts.

Reviewers of current medical literature cannot fail to recognize that there is a good deal of truth in this criticism. There is far too much special pleading in favour of some arbitrarily-chosen hypothesis. Writers deliberately set out with the intention of accumulating data in support of some preconceived theory; the facts which are found to be corroboratory are emphasized; those which might be interpreted in an opposite sense are explained away; and the final conclusion is not an objective statement logically deducible from the facts themselves but a personal opinion, leaning upon facts for support but taking root from the author's own mind. The author's ambition is to gain recognition as an authority, to voice his own authority rather than to make the facts speak for themselves. The result is that, on taking a general survey of recent medical literature upon a particular topic, one generally finds a discordant jargon of authorities, each clamouring for his own particular hypothesis. Beneath this confusion it is often difficult to discover a current of steady progress; and, whilst recognizing that there is a legitimate sense in which the working hypothesis is an indispensable guide to scientific research, one cannot help feeling that the weakness of modern research is a tendency to distort the facts in order to support personal opinions. Take better care of the facts and the hypotheses will take care of themselves.

Another interesting chapter in Dr. Bieganski's book is that in which he discusses the use and abuse of medical statistics. Whilst appreciating the important services which have been rendered by statistical methods in confirming leading principles of medical science, he gives some excellent illustrations of the well-known fact that statistical data are often highly misleading. They are frequently accepted as proof of a causal relationship when a closer scrutiny of the basis upon which they are collected would reveal complicating factors which rob mere percentage calculations of the significance they are supposed to possess. About this danger of misapplied statistics there can be no dispute; but perhaps the author does not attach sufficient importance to the work recently done in the application of mathematical methods to the elucidation of general principles from biological and medical statistics. Attention may also be called to Dr. Bieganski's useful analysis of the logical principles involved in establishing a correct diagnosis.

Whilst finding much in this book which we can recommend, it is necessary to add that in some of the chapters—for example, those on clinical observation and the conception of disease—the author indulges in unnecessary verbosity, and is rather commonplace. He wearies us with needless platitudes about matters of elementary common sense which are familiar to every medical student.

TEXTBOOKS OF PSYCHIATRY.

IN a textbook of mental diseases recently issued under the somewhat comprehensive title of *Mind and its Disorders*,[3] Dr. W. H. B. STODDART endeavours to provide for the student a succinct account of normal and abnormal mental processes, the attempt being made throughout to relate the mental to the underlying physical or nervous series of events. The work, which contains forty-two chapters and two appendices, is divided into three parts: the first dealing with normal psychology; the second with the psychology of the insane; and the third with mental diseases, treated methodically and in detail according to their clinical categories. In the first part, on normal psychology, which occupies only the first 97 pages, the author gives brief and practical descriptions of sensation; perception and ideation; affective processes; reflex, automatic, and voluntary action; attention; fatigue; sleep; expression, and so on, as far as is possible, from the physical—that is, from the anatomico-physiological—point of view. Dr. Stoddart excludes, as useless to the practical physician, what he terms in his preface "the transcendental psychology of modern schoolmen," and wisely does not venture into the fascinating, but, from the didactic point of view, unsuitable field of metaphysical speculation. His explanations of mental and neural processes are based throughout on the neurone theory, which, he says, "at the present day meets with almost universal acceptance," with the further support of the theory of the motility of the neuron—that is, the theory of the protrusion and retraction of dendritic "gemmules." It is not necessary to enter here into so controversial a question as that of the neurone theory. It is only right to mention, however, that this theory, even though the term "neurone" is in general use, has lost within recent years so many of its former adherents that, though it may be too much to say, with C. Golgi, that it is on its last legs, it is certainly now standing upon its defence. Also the theories of neuronal or gemmular retractility, and inter-neuronal "synaptic resistance," of which Dr. Stoddart makes much use in the subsequent chapters, are of so hypothetical a character—the histological features on which the retractility theory is based being, according to authoritative investigators, artifacts and producible at will by certain methods, notably by the unhappy Golgi method—that a suspended judgement is clearly called for. Passing to Part II, on the psychology of the insane, the author gives very clear and useful descriptions of the disorders of sensation, perception, ideation, the emotions, conduct, and judgement; mainly, and quite rightly, from the point of view of their objective recognition and appreciation by the medical man. In Part III, which takes up much the greater portion of the whole work, after a brief discussion of the causes of insanity and the physical stigmata of degeneration, the author begins his principal task of describing clinical types of insanity. In his classification Dr. Stoddart follows Kraepelin to some extent. Under "intermittent and periodic insanities (maniacal-depressive insanity), the author describes melancholia, mania, anergic stupor, and terminal dementia, and in discussing their pathology he outlines a theory of intraneuronal intoxication, according to which the maniacal phase is due to an irritating toxin, and melancholia to a paralysing toxin within the cortical nerve cells, the author's explanations being based upon the view of Hughlings Jackson that large proximal-joint slow movements are innervated by large, and small peripheral-joint rapid movements by small cortical cells. Under dementia praecox Kraepelin's three forms are accepted and described with a fourth form, "simple dementia praecox," which is stated to be rare, and characterized by slow dementia supervening upon congenital imbecility. Paranoia, a classification which is steadily gaining wider acceptance in this country, is treated briefly, as are also psychasthenia—limited by the author to irrepressible thoughts, fears, and impulses—neurasthenia, and hysteria. The remaining classification and exposition fall into line with those generally accepted in this country. In the chapter on general paralysis a very good general account of the signs and symptoms of this disease is given, the main physical or neurological features, which have been greatly filled in during recent years, receiving careful consideration. In discussing the etiology of this disease, Dr. Stoddart, who, like the overwhelming majority of writers, considers previous syphilitic infection to be a *sine qua non*, remarks that in China, Japan, and Egypt, in which countries syphilis is rife, general paralysis is of rare occurrence. This statement has been frequently made by other writers, but it would be of value to know how far it rests on unimpeachable evidence. Adequate statistics from China and Japan are wanting, but so far as Egypt is concerned the reports of the Egyptian Government Asylum show that general paralysis accounts for 7 per cent. of the annual

[3] Lewis's Practical Series. *Mind and Its Disorders*. A Textbook for Students and Practitioners. By W. H. B. Stoddart, M.D., F.R.C.P., Assistant Physician to Bethlem Royal Hospital. London: H. K. Lewis. 1908. (Demy 8vo, pp. 504; 74 illustrations, 9 plates. 12s. 6d.)

admissions, and more than 25 per cent. of the deaths. In writing this book it is clear that Dr. Stoddart has had constantly before him the desirability of viewing symptoms and symptom-complexes with an eye to their neurological significance, and of laying emphasis on the physical signs accompanying the mental disorders treated. Although it is as yet impossible to attach the value of differential criteria to these physical signs as between one psychosis and another, such a mode of looking at them is of the greatest present value, and promises to be of still greater service in the future. The reader will find a great amount of valuable information in the book, even if at times the facts are somewhat baldly stated, and clear and admirable advice upon the treatment of the insane.

Professor WM. WHITE, of Washington, in the foreword to his *Outlines of Psychiatry*,[4] modestly disclaims for his book any completeness or originality, and states that it is merely intended to afford a helpful guide to his students, so that they may follow his lectures more easily. After a critical perusal of this textbook, however, we cannot but conclude that it is bound to be used with profit by a much wider circle. It is a capital book, well and clearly written; broadly philosophical in its treatment of the nature of mentality; careful and impartial in its examination of the causes of insanity; definite and unambiguous in its descriptions of symptomatological features and clinical types, and thorough in the instructions given as to methods of examination. The author in his classifications follows in the main that of Kraepelin; references and footnotes have been avoided so as not to detract in any way from the continuity of the text, and extended notes of cases are not included for the same reason. The book has a paper cover, but deserves a more durable binding.

We have received the second edition of Professor POTTS'S *Nervous and Mental Diseases*,[5] a textbook for students and practitioners, whose first edition was reviewed in the BRITISH MEDICAL JOURNAL of March 1st, 1902. The book has received large additions, numerous new illustrations and useful plates have been inserted, and the whole text is excellently illustrated and elucidated by diagrams, plates, and photographs. The chapter on mental diseases has been almost entirely rewritten. The second is a great improvement on the first edition, and forms a very satisfactory textbook for general use, which would be still further improved if the many references to authoritative articles, printed as footnotes, were collected in an authors' index.

A small and handy book, by Professor RAECKE, tutor and principal medical officer in the Neurological and Psychiatrical Clinic at Kiel, on the outlines of diagnosis in psychiatry,[6] will be found of considerable use to foreign students of German psychiatrical literature, not so much on account of its brief and sharply-drawn pictures of the types of mental disorder, arranged by the author according to the classifications of Binswanger and Siemerling, but because this volume, being intended for students, contains extended definitions of neurological and psychiatrical terms in use in German textbooks, whose exact meaning is rarely given even in technical dictionaries.

Dr. L. PIERCE CLARK, Senior Physician to the Hospital for Nervous Diseases, New York, and Dr. A. R. DIEFENDORF, Lecturer on Psychiatry at Yale University, the joint authors of a small manual entitled *Neurological and Mental Diagnosis*,[7] say that the work is designed to aid the student and general practitioner to make thorough and systematic examinations in nervous and mental diseases. The book is composed of two parts, the first on "Methods of Examination in Neurological Diagnosis," by Dr. Pierce Clark, and the second on "Methods of Examination in Mental Diagnosis," by Dr. Diefendorf; a glossary and an index. The first part contains succinct and fairly complete directions to the student as to the points to be looked for and the manner of eliciting and recording the same, well illustrated by charts and photographs. Beyond this the author does not go, no attempt being made to describe types of nervous disease. The second part is more complete in plan, the first chapter containing short descriptions of the usual symptoms of mental disorder and the second consisting of clinical descriptions of the several types of mental disorder according to Kraepelin's classification. Each description takes the form of a simple clinical record of a particular case, without any subsequent discussion; differential diagnosis is not touched upon, and in each case only the specific and outstanding features are mentioned.

[4] *Outlines of Psychiatry.* By Wm. A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington; Professor of Nervous and Mental Diseases, Georgetown University, Washington, etc. New York: Journal of Nervous and Mental Disease Publishing Co. 1908. (Med. 8vo, pp. 238. 2 dollars.)

[5] *Nervous and Mental Diseases.* By Charles S. Potts, M.D., Professor of Neurology in the Medico-Chirurgical College of Philadelphia, U.S.A. Second Edition. London: Henry Kimpton. 1908. (Demy 8vo, pp. 570, illustrations 133, plates ix. 12s. 6d.)

[6] *Grundriss der psychiatrischen Diagnostic.* [Outlines of Diagnosis in Mental Diseases.] By Professor Dr. Raecke, with a Preface by Professor Siemerling. Berlin: August Hirschwald. 1908. (Post 8vo, pp. 154. M. 3.)

[7] *Neurological and Mental Diagnosis: A Manual of Methods.* By L. Pierce Clark, M.D., and A. Ross Diefendorf, M.D. New York and London: The Macmillan Company. 1908. (Post 8vo, pp. 200. 5s.)

BACTERIOLOGY.

DR. EMANUEL VON HIBLER'S researches on the pathogenic anaërobes[8] form a useful contribution to bacteriology. The present volume deals with fifteen different species, including the bacillus of symptomatic anthrax, varieties of the bacilli of malignant oedema, the tetanus bacillus, and the bacilli associated with epidemics of meat poisoning. In the first part of the book the cultural characters of these various micro-organisms are carefully worked out, and diagnostic points of difference are noted. The remainder of the volume deals with the pathogenicity of the anaërobes and the anatomical and histological characters of the lesions produced. A few points of special interest may be mentioned, as illustrating differences in the virulence of these bacteria for laboratory animals. The bacillus of symptomatic anthrax produces fatal infection in guinea-pigs, rabbits, white mice, white rats, and sparrows, but not in grey rats. In contrast to this organism, the *Bacillus aërogenes capsulatus* rarely produces fatal infection in rabbits, this result being obtained only with young animals inoculated with a large dose of highly virulent culture. The author finds that the *Bacillus enteritidis sporogenes* of Klein may be distinguished from the nearly related bacillus of symptomatic anthrax by the fact that in contrast to the latter it produces progressive and fatal disease in grey rats, but not in white rats and not in sparrows. From an extensive series of microscopic investigations the author arrives at the conclusion that histological examinations of the lesions produced by these varieties of anaërobes do not afford substantial aid to differential diagnosis. The histological picture, in any given infection, is very variable, being largely dependent on the local conditions of the particular piece selected for examination; and even an extended histological study cannot afford justification for more than a general surmise as to the type of infection present; it does not add much to the knowledge which may be derived from the naked-eye appearances alone. In addition to his capacity for original research, Dr. von Hibler has the gift of writing clearly and concisely. His subject-matter is well planned out, and the summaries which he attaches to each chapter enable the reader to grasp the main points without wading through a mass of detail. There is also a valuable collection of plates illustrating the characteristics of pathogenic anaërobes.

Professor HEWLETT has carefully revised his *Manual of Bacteriology*,[9] and the new edition may be recommended as an excellent book. Two of the best chapters are those on typhoid and plague. They give a good outline of recent research on these subjects, but do not overburden the student with too many minutiae or controversial issues. In this respect the chapter on diphtheria is perhaps rather less successful. Disputed points relating to distinctions between true diphtheria bacilli and various "pseudo" forms are presented fairly and temperately; but these matters are too difficult and complicated to be suitable for brief outline in an elementary textbook. The student to whom bacteriology is a new subject needs something more

[8] *Untersuchungen über die pathogenen Anaëroben.* Von Dr. Emanuel von Hibler. Jena: Gustav Fischer. 1908. (Roy. 8vo, pp. 438. 17 plates. M. 25.)

[9] *A Manual of Bacteriology, Clinical and Applied.* By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H. Third edition. London: J. and A. Churchill. 1908. (Demy 8vo, pp. 650; 24 plates. 10s. 6d.)

simple and categorical to begin with. In the chapter on tuberculosis there is a sentence which is difficult to understand: "It had been known that there are certain differences between the bacilli of human and of bovine tuberculosis, the latter being shorter and thicker, and more readily cultivated than the former." According to most authorities, it is the human and not the bovine bacillus which is "more readily cultivated."

Professor POZZI-ESCOT'S book on general microbiology[10] is a reproduction of lectures delivered in 1907 before the National School of Agriculture and Veterinary Medicine of Peru. The lectures were intended to be an elementary course, introductory to the more specialized study of industrial or medical bacteriology. The first part of the work gives a popular account of the morphology, physiology, and cultural characters of micro-organisms. Bacterial secretions, toxins, antitoxins, and serumtherapy are also discussed in general outline. The second part of the volume is devoted to the description of the principal groups of microbes, with special reference to their industrial importance in the dairy and in the production of wine, spirits, and beer. There is also a chapter on the bacterial fertilization of the soil. The book is written in a style which will appeal to the general reader who desires a popular and readily assimilated account of what microbiology means. For students whose interests are of a more serious and commercial nature, the utility of the work will depend upon the temperament of the individual. Those who want to plunge at once *in medias res* will prefer a book with fewer preliminary generalizations and more comprehensive details; the student who likes to begin with a gradual initiation into the general point of view will find the author's method acceptable. For the benefit of persons specially interested in the preparation or consumption of alcoholic liquors, it may be mentioned that the author devotes particular attention to the requirements necessary for the production of a delectable flavour in the aromatic constituents of rum.

The *Manual of Bacteriology*, written by Professor WILLIAMS, of Buffalo, and revised by Dr. MEADE BOLTON, of Washington,[11] is a rather colourless production, fairly well up to the average, and not calling for much special comment in the way of either praise or blame. Dr. Meade Bolton, who has incorporated a good deal of his own work in the present edition, is well known in America as an expert on the bacteriological examination of water and milk. The chapter on these subjects is the best in the book, and, whilst not sufficiently detailed for the purpose of advanced students, gives the beginner a good general idea of this branch of practical bacteriology. The influence of pasteurization on the bacterial content of milk is a subject of great practical importance, upon which Dr. Bolton's personal experience justifies him in speaking with authority. His general conclusion, with which we agree, is that commercial pasteurization is in need of more rigorous inspection from the public health authorities. In the chapters on the pathogenic bacteria we are glad to see that special attention is paid to clinical diagnosis; the more theoretical aspects of the subject are treated more successfully in some of the students' textbooks by English authors.

Professor JORDAN'S *General Bacteriology*,[12] which is based on lectures delivered to students in the University of Chicago, shows that the writer possesses the gift of presenting his subject in an interesting manner. He provides quite as much detail as the elementary student is capable of assimilating, and he makes free use of recent research, but he contrives to avoid the dryasdust method, and puts it all in an eminently readable fashion. In addition to the usual routine matter there are chapters on the bacteriology of milk and milk products, the nitrifying organisms, the use of bacteria in tanning, the curing of tobacco, and other industries, and the bacterial diseases of plants. The last of these chapters is, perhaps, the most interesting. Upon the important question of the bacterial content in milk the writer does not attach sufficient importance to the practical difficulties in the way of reform. Referring to the very low bacterial standard (10,000 bacteria per cubic centimetre) adopted by some of the American Medical Milk Commissions for the production of "certified" milk, he says that "little difficulty has been found" in bringing the bacterial count down to this very low level. That is hardly the case; the number of farmers capable of conforming to this standard is very small, and the output of "certified" milk is extremely limited. Mention is also made of certain American cities which have "established," for the general milk supply, bacterial standards varying in different instances from 500,000 to 100,000. Professor Jordan fails to point out that the mere adoption, as a municipal regulation, of a bacterial standard, is a very different matter from enforcing obedience to such a regulation. Some of the cities which he mentions have found it quite impossible to prevent the sale of milk containing bacteria in excess of the prescribed limit.

In the third edition of *Pathogenic Micro-organisms*[13] Dr. W. H. PARK, assisted by Dr. ANNA WILLIAMS, has carried out an extensive revision of the text and considerably expanded the size of the volume. In their excellent account of opsonins the authors call attention to a practical difficulty which is sometimes ignored. They find it is generally impossible to have the test of the opsonic power reported within twenty-four hours, and in the treatment of the poor in out-patient practice the interval between taking the sample for diagnosis and performing the vaccination may be much longer; in the meantime an important change may have taken place in the opsonic index. This impossibility of knowing the opsonic power at the moment of inoculation has been found by the authors to constitute a very serious difficulty. There is a useful chapter on the characters and distribution of the bacteria normally present in the intestinal tract. A good feature of the important chapter on the tubercle bacillus is that special attention is given to points of practical importance, such as the presence of tubercle bacilli in the milk of cows which have no udder disease but react to tuberculin, and the occurrence of the bacillus in the faeces of cows with internal tuberculosis. The well-informed and thoroughly practical article on the general bacteriology of milk is also deserving of special praise. As we remarked in our review of the second edition (BRITISH MEDICAL JOURNAL, May 26th, 1906, p. 1225), the volume is well above the average of the ordinary student's textbook, and may be warmly recommended.

Dr. M. V. BALL'S *Essentials of Bacteriology*,[14] which has now arrived at its sixth edition, may find favour with students who like to acquire their knowledge from books prepared on the *multum in parvo* principle. The author is particularly successful in packing a large amount of detail into a small space, and may be especially commended for introducing a chapter on various bacteria which are pathogenic for animals but not for man; the interest and importance of these micro-organisms is often overlooked by the average medical student. Speaking of typhoid carriers, Dr. Ball says: "Some individuals retain a culture of the bacilli in the gall bladder for years, and manufacture, or at least expel, true virulent bacilli through the faeces continually." The word "continually" is a little too strong, and may be misleading; the discharges of bacilli may be intermittent, and it may be necessary to examine the stools several times before obtaining a positive result. The methods of cultivating the tubercle bacillus are not described very carefully. It is said that glycerin agar is a much better medium than blood serum, and that it "is now almost exclusively used." On the contrary, blood serum is still used extensively, particularly for raising primary cultures; and most observers find that for this purpose it is a better medium than glycerin agar.

[10] *Leçons clémentaires de Microbiologie Générale.* Par M. Emm. Pozzi-Escot. Paris: Jules Rousset. 1909. (Med. 8vo, pp. 336, figs. 106. Fr. 9.)

[11] *A Manual of Bacteriology.* By Herbert Hugh Williams, M.D. revised by B. Meade Bolton, M.D. Fifth edition, revised and enlarged. London: Rebman, Limited. 1908. (Demy 8vo, pp. 480, 113 illustrations. 9s.)

[12] *A Textbook of General Bacteriology.* By Edwin O. Jordan, Ph.D. Philadelphia and London: W. B. Saunders Co. 1908. (Medium 8vo, pp. 557; 163 illustrations. 13s.)

[13] *Pathogenic Micro-organisms including Bacteria and Protozoa.* By William Hallock Park, M.D., assisted by Anna W. Williams, M.D. Third edition. London: Henry Kimpton; and Glasgow: Alexander Stenhouse. 1908. (Roy. 8vo, pp. 650; 176 engravings, 5 plates. 18s.)

[14] Saunders's Question-Compends, No. 20. *Essentials of Bacteriology* By M. V. Ball, M.D. Sixth edition. Philadelphia and London: W. B. Saunders Co. 1908. (Crown 8vo, pp. 290; 135 illustrations. 4s.)

Again, the student is told that "bouillon containing 4 per cent. glycerin is a very good nurture ground"; but he is not informed that, unlike most bacteria, the tubercle bacillus forms a pellicle on the surface instead of growing in the substance of the broth. Whilst admitting that Dr. Ball's book may serve a useful purpose, we think he is claiming too much for it when he says "it aims to contain the essentials of larger works."

The small book on simple aids to the performance of bacteriological investigations, by Drs. ABEL and FICKER,[15] may be found useful by medical practitioners who desire to equip a room for the purpose of making their own bacteriological diagnoses. The authors enter minutely into the practical details of laboratory furniture, the sterilization of apparatus, the preparation of culture media, and other matters upon which the beginner requires careful guidance. The advice is thoroughly sound, and those who cannot afford elaborate or costly equipment will appreciate the practical hints as to various ways in which expense may be saved.

NOTES ON BOOKS.

THE sixty-second volume of *Guy's Hospital Reports*,[16] that for 1908, is edited by Mr. F. J. STEWARD and Dr. HERBERT FRENCH. It is an extremely valuable number; a few of the papers, all of which are interesting, have already appeared in other publications of more or less ephemeral form, but doubtless Guy's men will be pleased to have even these in an easily accessible position in the report of their hospital. Among the more valuable of the contributions appearing for the first time are one on gastro-enterostomy in gastric ulceration by Dr. H. C. Cameron (being part of a thesis for the M.D. degree of the University of Cambridge); one on myasthenia gravis, by Dr. A. S. Morton Palmer (also a Cambridge thesis), which includes a valuable abstract of 124 recorded cases; one on peritoneal adhesions in a series of 50 consecutive *post-mortem* examinations by Mr. W. M. Mollison and Dr. H. C. Cameron; and one on arterial blood pressure in health and disease by Dr. H. C. Mann. Besides these there is a learned paper by Mr. Richard Assheton on the blastocyst of *Capra*, with some remarks upon the homologia of the germinal layers of mammals. The volume, especially as representing the clinical work of the younger men, is highly creditable to the school.

There is nothing exceptionally good in the fourth volume of the eighteenth series of *International Clinics* for 1908.[17] Having said this, it may appear invidious to mention what appear to be the better of its twenty-seven short papers, but perhaps it would seem more so to mention the less good. Among those which promise to have permanent value are one on acute dilatation of the stomach, by Dr. A. G. Nicholls; one on splanchnoptosis, by Dr. T. R. Brown; one on paronychia lateralis, by Dr. C. G. Cumston; and one on the serum treatment of epidemic cerebro-spinal meningitis, by Dr. C. H. Dunn. An unusually large proportion of the papers, twenty-three out of twenty-seven, are by American authors.

The publication of a new edition of PENZOLDT and STINTZING'S handbook of therapeutics[18] has been commenced, and the first fasciculus of the first volume reached us on February 20th. The first edition appeared fourteen years ago, and as a second and third have already been disposed of, the work, in spite of its large size and costliness, has clearly met the needs of the profession in Germany, and has become well known in other countries. The new edition will be enlarged by the inclusion of articles on surgical treatment, and on gynaecology and obstetrics. The list of contributors has been revised, and many new recruits have been enlisted. The first fasciculus of the new edition, which can be purchased as a specimen for 1 mark, contains an article on general prophylaxis of infectious diseases, by Professor Gärtner of Jena, who was the author of the article on the same subject in the first edition.

The publication of the large work on the diet and dietetic treatment of children, edited by Professor AD. CZERNY and Professor A. KELLER,[19] is proceeding in a most leisurely fashion. In December, 1902, we announced the publication of the first four parts, containing together some 320 pages; we have since received the fifth, sixth, and seventh parts, the last so recently as February 8th, 1909.

[15] *Einfache Hülfsmittel zur Ausführung bakteriologischer Untersuchungen.* Von Dr. R. Abel und Dr. M. Ficker. 2 Auflage. Würzburg: Curt Kabitzsch. 1909. (F'cap. 8vo, pp. 57. M. 1.20.)

[16] *Guy's Hospital Reports.* Edited by F. J. Steward, M.S., and H. French, M.D. Vol. lxii (vol. xlvii of third series). London: J. and A. Churchill. 1908. (Demy 8vo, pp. 298.)

[17] *International Clinics.* Edited by W. T. Longcope, M.D. Vol. iv. Eighteenth Series. 1908. Philadelphia and London: J. B. Lippincott Co. 1908. (Roy. 8vo, pp. 318.)

[18] Penzoldt and Stintzing's *Handbuch der gesamten Therapie.* Fasciculus I. 4th edition, in 23 parts, forming 7 volumes. Jena: G. Fischer. 1909. (Sup. roy. 8vo. pp. 80. M.1. The price of the complete work is M.100 in paper covers, or M.117.50 bound. The price of each fasciculus except the first is M.4.50.)

[19] *Des Kindes Ernährung, Ernährungsstörungen und Ernährungstherapie.* Von Professors Ad. Czerny, of Breslau, and A. Keller, of Berlin. Abt. 5, 6 (1 and 2 Hälfte), and 7. Leipzig and Wien: F. Deuticke. 1904–06 and 1909. (Sup. roy. 8vo, pp. 481–699 and 1–256. M. 4.50, Abt. 7, M. 3.60.)

MEDICINAL AND DIETETIC PREPARATIONS.

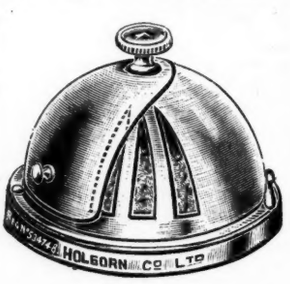
Extract of Malt.

OUR attention has been called to an extract of malt sold under the registered name of Dia Malt. It appears to be a pure extract of malt, free from any foreign ingredient, and of an unusually high diastasic power, inasmuch as the sample examined was found to digest practically fourteen times its own weight of starch in half an hour. The proportion of proteids was 5.8 per cent., which is higher than in many other extracts; it is a palatable preparation, and as it is also very active it is likely to be of use in the treatment of conditions for which malt extract is indicated. It is manufactured by the British Dia Malt Company, 11 and 13, Southwark Street, London, S.E., whose works are at Sawbridgeworth, Hertfordshire. The malting is carried out by an improved principle under an Austrian patent. One of the features of the method is that the malting is done in receivers and not on the floor. The barley, after undergoing a preliminary cleansing, is dried at about 110° F.; it is then steeped in receivers each having a capacity of 100 qrs., or 400 cwts., water is injected from beneath, and the grain is thoroughly cleansed by stirring in these tanks, where it remains from sixty-five to seventy-two hours. The water is then run off and the contents introduced into six large drums, which revolve slowly on a horizontal axis. These drums, known as pneumatic germinators, replace the older method of allowing the grain to germinate on flat floors where it was turned over by hand shovels. Each pneumatic germinator holds 50 qrs., or 200 cwts., and is traversed by a series of perforated tubes; from these tubes moderately cold air is forced into the grain, and in this way the temperature of the process of germination can be accurately controlled and the risk of contamination by mould obviated. The germinated grain is then malted, and the malt ground by roller mills; after mashing in ordinary mash tubes the liquid is drawn off into a receiving chamber and concentrated. The wort pans are made of tinned copper and have rounded corners, every attention being given to cleanliness.

MEDICAL AND SURGICAL APPLIANCES.

Cotton-wool Receptacle for Aurists and Rhinologists.

DR. L. HEMINGTON PEGLER (London) sends a description of a wool-holder made for him by the Holborn Surgical Instrument Company. A removable dome-shaped cover of bright metal encloses the wool by catching on to flat, heavy base of the same material. On one side of the cover are three fenestrations, through which the requisite pledget can be detached by forceps, the weight of the receptacle keeping it quite firm. The wool is protected when not in use by a movable plate of metal, operated by a small button, and adjusted by a screw at the summit, which plate slides over the apertures, and also serves to alter their shape and dimensions if desired. The holder is best charged through the apertures, longish masses, about the width of three fingers, being selected from a sheet of long fibre absorbent wool. The shape of the apertures can be ordered to take other forms than the figure shows—for example, parallel slits, inverted triangles, two triangles base to base separated by a cross-bar, or, better still, all of these in one cover. The figure is one-third the size of my own holder, but I have a larger one on my table at the hospital. The whole contrivance is sterilizable.



THE ROYAL COLLEGES AND THE UNIVERSITY OF LONDON.

THE Royal College of Physicians of London and the Royal College of Surgeons of England appointed some time ago delegates to consider and propound a scheme for establishing a system of conjoint examinations in accordance with Statute 123 of the University. The delegates were:

Sir R. Douglas Powell, Bart., K.C.V.O., Chairman.

Dr. Norman Moore.	Dr. H. A. Cayley.
Dr. Edward Liveing.	Mr. Henry Morris, P.R.C.S.
Dr. Frederick Taylor.	Mr. A. Pearce Gould.
Sir William Allchin, M.D.	Mr. H. T. Butlin.
Sir W. Watson Cheyne, Bart., C.B.	Mr. R. J. Godlee.
	Mr. H. H. Clutton.

The report of the delegates dated December 3rd, 1908, was approved and adopted by the Council of the Royal College of Surgeons on December 15th, 1908, and by the Royal College of Physicians on December 17th, 1908. The scheme proposed in this report was communicated to the University of London in a letter addressed to the Vice-Chancellor by the presidents of the two colleges on January 22nd, 1909, asking him to bring the subject before the Senate and expressing the hope that the Senate would see its way to appoint representatives to meet the delegates of the two colleges and discuss the proposals outlined in the report.

REPORT.

The delegates appointed by the Royal Colleges

To consider and draft a scheme which, if approved by the Royal Colleges, shall be submitted to the Senate of the University of London, with the object of establishing a system of Conjoint Examinations,

beg to report as follows:

Taking into consideration the provisions of Statute 123 of the University of London, the existing conditions of medical education in the metropolis and the undoubted demand for a Degree in Medicine which shall be more accessible to the average London medical student, and assuming the existence of a general desire on the part of the University, the Royal Colleges, and the medical schools of London to unite in a concerted effort to provide such a degree, the delegates are of opinion that there should be little difficulty in arriving at an equitable and advantageous solution of the problem.

Statute 123 of the University of London is as follows:

The Senate may make arrangements with the Royal College of Physicians of London and the Royal College of Surgeons of England, or either of them, to conduct jointly with the Senate examinations in such portions of the subjects included in the course of study for a medical degree as may be agreed upon between the Senate and those colleges, or either of them, and may also make similar arrangements with other corporations and institutions holding professional examinations in subjects included in other courses of study.

At the present time, of the male students who obtain the M.B. or M.D. degree of the London University, 84 per cent. take the diplomas of the Royal Colleges, and of the graduates in medicine of the University of Cambridge 71 per cent. take the diplomas. Of the total number of diplomates of the Royal Colleges 20 per cent. take the degree of the University of London, 16 per cent. the degree of the University of Cambridge, and 15 per cent. the degrees of other universities, English, foreign, or Colonial. It is thus shown that, roughly, one half of the diplomates of the two colleges are also graduates in medicine.

During the four years 1903-6:

(1) Of Bachelors and Doctors of Medicine in the University of London *Calendar* for 1907-8 there are respectively 365 and 164 male graduates who obtained their degrees during these years. Of such graduates, 311 (85.2 per cent.) and 135 (82.3 per cent.) were at the time, or became subsequently, diplomates of the Royal Colleges. Therefore, of the total male graduates in Medicine—that is, 529—446, or 84.3 per cent., are also diplomates of the Royal Colleges.

(2) Of 253 men who obtained the degree of M.B. of the University of Cambridge, 181, or 71.5 per cent., hold the diplomas of L.R.C.P. and M.R.C.S.

(3) Of 1,704 candidates who obtained the diplomas of L.R.C.P. and M.R.C.S., 885, or 51.9 per cent., are also graduates of or candidates for the degrees in Medicine of the following Universities:

(*a*) Cambridge, 274, or 16.1 per cent.
(*b*) London, 347, or 20.4 per cent.
(*c*) Other English Universities, 119, or 7 per cent.
(*d*) Irish and Scottish Universities, 17, or 0.9 per cent.
(*e*) Indian and Colonial, 103, or 6 per cent.
(*f*) Foreign Universities, 25, or 1.5 per cent.

It is further evident that there is a general desire amongst those who intend to take university degrees or who already possess them to obtain also the diplomas of the Royal Colleges.

It is desirable that in London the system of teaching and examination should be co-ordinated in such a manner as to reduce the number of examinations.

In London the same representatives of medicine and surgery, midwifery, anatomy, physiology, and other subjects, teach for the examinations of the University and of the Royal Colleges. The organization of medical education in London, whether by the University, the Royal College of Physicians, or the Royal College of Surgeons, is largely controlled by the same individuals. Yet for the University and for the Royal Colleges there are separate boards of examiners in all branches of the curriculum, separate examinations involving considerable expense, and a re-examination of the student in the same subjects, frequently within a few months.

The general character of the examinations and the methods of conducting them by the University and by the Royal Colleges are very similar.

The University makes use of the Examination Hall of the Royal Colleges for the Intermediate M.B. examinations, for the viva voce examinations in Medicine, Midwifery, Forensic Medicine, Public Health, for the Clinical Examination in Surgery and the examination in Surgical Anatomy and Apparatus for the Final M.B., B.S., as well as for part of the M.S. degree. The rooms of the Royal College of Surgeons and preparations from the Hunterian Museum are placed at the disposal of the University for the pathological part of the Final Examination. The instruments, specimens, and other apparatus of the Conjoint Board are also utilized, and the officials of the Board assist to a considerable extent in the arrangements for some of these University examinations.

In considering such a scheme the delegates have taken as a basis of their deliberations the following principles:

(*a*) That the University should retain all its existing rights as to the granting of degrees, but should consent to exercise them as regards pass degrees conjointly with the Royal Colleges so far as those students are concerned who shall have spent not less than four years in study at London medical schools and hospitals and who shall have complied with such conditions as the University and the Royal Colleges may determine.

It is assumed that the University will continue to grant, independently of the Royal Colleges, degrees in Medicine and Surgery, which might be called Honours degrees. The views of those who maintain that the present degrees of the University of London are of an Honours standard would thus be met.

(*b*) That the Royal Colleges should retain all their existing rights, to grant diplomas to those who (1) are not eligible under the foregoing conditions; or (2) do not desire to come under such conditions.

It is thus assumed that the Royal Colleges will continue to admit to examination for their diplomas candidates from other universities, home, foreign, and colonial, as well as London medical students who are not students of the London University.

(*c*) That the Royal Colleges should be associated with the University in conducting the Preliminary Scientific, Intermediate, and Final Examinations for the Pass Degree (M.B., B.S., M.D.)

This arrangement will secure—

1. That the average London student will be able to obtain the degree of Doctor of Medicine.
2. That medical education in London will become more systematized.
3. That there will be a reduction in the number of examinations to be passed by the student desiring to take a degree and the diplomas.
4. That a larger proportion of students would be encouraged to avail themselves of the great opportunities of clinical study afforded by the hospitals of London.
5. That the University and the Royal Colleges acting together with the same staff and equipment would be able to reduce the expenditure on examinations.

The delegates beg to state that, should the principle of an association between the University and the Royal Colleges be accepted, they are prepared to bring forward a working scheme for carrying the proposal into effect.

In view, however, of the fact that since the appointment of the delegates the Senate of the University has asked for a Royal Commission, the delegates beg to recommend that the Royal Colleges should take steps to secure the representation of their views on the subject of the present reference before any Royal Commission which may be appointed, and should at a fitting time ask the University to appoint delegates to discuss this question with the delegates of the Royal Colleges, so that if possible they may agree upon a joint representation to the Royal Commission.

R. Douglas Powell.

THE CREMATION SOCIETY OF ENGLAND.

The annual general meeting of members of the Cremation Society of England was held on Wednesday, February 24th, the President, Sir Charles Cameron, M.D., LL.D., being in the chair.

In moving the adoption of the report of the Council and the accounts for 1908, the President recalled the fact that at the last general meeting new rules were sanctioned under which the subscription for life membership of the society was reduced to five guineas. This carried with it the right of cremation, without further fees, in any crematory in Great Britain. This arrangement, he said, had already led to a large increase in the number of life members. The number of cremations in Great Britain in 1908 exceeded that in any previous year, and fell short only by 5 of the round number of 800. The experience of Germany induced him to take a very hopeful view of the present position. There cremation was introduced years before it was practicable in this country, and the cremations performed in Germany up to the present numbered about 20,000. In Germany during the twenty years succeeding 1878, when the pioneer crematory at Gotha was opened, the total number of cremations was only 3,111, giving an average for the period of 155 a year. It was not till 1902 that the number attained the point which had now been reached here. But by that time the movement had taken root, and since then in Germany it had progressed literally by leaps and bounds; the increase on the previous year in 1907 amounted to over 900 cremations, and the figure for 1908 again exceeded that of 1907 by 1,073. As human nature in Germany and in this country was very much the same, and as there were now 13 crematories at work in Great Britain against 16 in Germany, the President saw no reason why the progress of the movement here should not proceed on much the same lines as had been experienced in Germany. Here there was abundant evidence of a widespread and ever-increasing interest in the progress of cremation. During the past year some 500 applications for information of a propagandist character had been received. There had also been some 50 inquiries from municipal or public bodies and individuals at home and abroad regarding the construction and mechanism of crematories, the formation of local societies, points of law, and other technical details. The balance-sheet showed the healthy financial condition of the society. It was not a trading company, but in its future development commercial considerations would have to play a prominent part. He mentioned that an undertaker, who proposed to confine his work exclusively to arrangements for cremations, had started business in London. The President then referred to the security which the precautions required by law before cremation was permitted afforded for the detection of foul play. The investigations of a Parliamentary Committee had disclosed the scandalous laxity and inefficiency of the existing law on death certification. The committee recommended various self-obvious and much-needed reforms, but many years had since elapsed, and the state of the law with regard to earth burial remained as it was. It was very different in the case of cremation. There the requirements of the law were so strict as to render it practically impossible for any suspicious or doubtful case to escape a searching investigation.

After the report and balance sheet had been adopted and the council and officers re-elected, the election of the following vice-presidents by the council was confirmed by the meeting: The Duke of Bedford, K.G., the Earl of Mayo, P.C., K.P., Right Honourable Sir Walter Foster, P.C., M.P., Right Honourable Robert Farquharson, P.C., Honourable Percy Wyndham, J.P., D.L., Sir G. Anderson Critchett, Bart., F.R.C.S.Ed., C.V.O., and Sir John Tweedy, F.R.C.S.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

The annual general meeting of the Medical Graduates' College and Polyclinic was held at 22, Chenies Street, in London, on March 1st, with Dr. C. Theodore Williams in the chair.

Dr. W. H. Bailey, the new Secretary and Superintendent, read the notice convening the meeting.

The Chairman, in moving the adoption of the report and balance sheet, said that in regard to the falling off in the number of subscribers it must be remembered that the Polyclinic had to contend with rival institutions. There were the West London Post-Graduate School, the Tottenham and the Greenwich Schools, and in addition, there were some general hospitals, like St. Bartholomew's, where post-graduate courses were conducted. In the matter of lectures, however, the Polyclinic secured the best teaching, not only of London but of the United Kingdom; there had unfortunately been a general feeling during the troublous times of the Polyclinic that the place was not going on and that, therefore, it was no use joining, but he hoped that that impression would be corrected now that it had been agreed to carry on the Polyclinic. After referring to the excellent results of the laboratory work at the Polyclinic the Chairman announced that the institution had been admitted into the London Post-Graduate Association. In consequence of the generous donation from Lord Iveagh of £200, and the munificent offer from Sir Jonathan Hutchinson, the closure of the Polyclinic had been averted. He regretted that 245 of the members and subscribers to the Polyclinic had not returned any answer to the appeal for an increase of their subscription. He then announced that he himself had resigned the office of Chairman of the Council, and that the following resignations had also been received: The Treasurer, Dr. Cautley; the Chairman of the Finance and House Committee, Mr. Ernest Clarke; the Chairman of the Library Lectures Committee, Dr. Leonard Williams; and a large number of members from the Council.

Dr. C. O. Hawthorne, in supporting the motion, said that no one failed to recognize the generous and effective help of Sir Jonathan Hutchinson, and the medical profession felt a substantial degree of recognition and gratitude was due to that gentleman. It would not be wise for any of them to go home and think that the Polyclinic was in an absolutely safe position, for it must be remembered that Sir Jonathan Hutchinson had made his offer for two years only; and as a matter of fact, only twelve months would have to pass before the next annual meeting would have to contemplate whether the Polyclinic could be carried on then. He (Dr. Hawthorne) had always held that the wise policy to pursue was to adhere to the 1 guinea subscription; that view did not conflict with the invitation to members to increase their subscription, but it recognized that the chief function of the Polyclinic was to provide opportunities of clinical study to gentlemen who were engaged in practice in the metropolitan districts.

The resolution was put to the meeting and carried.

Dr. Dundas Grant was elected honorary treasurer, and the following gentlemen were elected members of council: Dr. H. Campbell, Dr. G. C. Cathcart, Mr. H. L. Eason, Dr. R. A. Gibbons, Dr. T. N. Kelynack, Mr. Cecil H. Leaf, Dr. James Mackenzie, Mr. Lockhart Mummery, Mr. Charles Ryall, Mr. Thomson Walker, and Mr. G. B. Mower White.

Mr. Frank Madden, F.R.C.S., Professor of Surgery at the University of Cairo, has had the honour of receiving from His Highness the Khedive the decoration of the Third Class of the Imperial Order of the Medjidieh on account of services rendered to His Highness's Government. Mr. Madden received his medical education in Melbourne and at St. Mary's Hospital, London. He has been ten years in Cairo.

THE

THERAPEUTIC APPLICATIONS OF RADIUM:

METHODS AND RESULTS.

SOME OBSERVATIONS ON THE METHODS AND RESULTS OF RADIUM TREATMENT IN ENGLAND.

By JAMES MACKENZIE DAVIDSON, M.B., C.M.,

MEDICAL OFFICER IN CHARGE OF X-RAY DEPARTMENT, ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS; AND CONSULTING MEDICAL OFFICER TO X-RAY DEPARTMENT, CHARING CROSS HOSPITAL.

PUBLIC interest in the therapeutic use of radium having been recently revived in this country in a rather sensational manner, it is not altogether a matter for surprise that many rather confused ideas on the subject have become prevalent. It may therefore prove of some service to give a short account of personal experience in the use of radium during the past six years.

As soon as the physical properties of radium became known, it was obvious, in the light of our previous experience of the beneficial effect of *x* rays and of the ultra violet light (Finsen method) in the treatment of various skin diseases, that this new substance would prove to be of some service in medicine. Indeed, seeing that radium gave forth *x* rays of extreme penetrability—the gamma rays—in addition to its alpha and beta rays—it seemed likely enough, *a priori*, that it might exceed the results produced by either the *x* rays or the Finsen method. And such, in fact, has proved to be the case.

Having been fortunate enough to secure some radium bromide of good quality early in 1903, I tried it in a case of severe rodent ulcer, which had resisted *x*-ray and other treatment, and had been sent to me at Charing Cross Hospital, from the skin department, for further treatment with the *x* rays. I used two sealed glass tubes, each containing 5 mg. of pure radium bromide, and applied them tentatively on the upper border of the ulcer which was encroaching on the lower right eyelid.[1] After five applications the ulcer, which was 1 in. in length and ¾ in. broad, was completely healed. There has never been any recurrence, and at the present time the patient is perfectly well.

This case, at Charing Cross Hospital, in May, 1903, is the first recorded in this country in which radium bromide was applied as a remedy. Since then I have treated a variety of cases in a similar manner, with equally astonishing success.[2]

As an impression appears to prevail that all the pioneer therapeutic work with radium has been done on the Continent, I should like to point out here that I am by no means the only medical man in this country to obtain very satisfactory results from its application at least two years before the Paris Radium Institute was founded. For example, the late Mr. J. T. P. Hartigan exhibited several successful cases before the Dermatological Society in January, 1904. In the same month Dr. Gerald Sichel reported a cure of rodent ulcer by radium.[3] Two months later the BRITISH MEDICAL JOURNAL reported that radium was then being used in the treatment of cancer at the Middlesex Hospital, the Cancer Hospital in the Fulham Road, and other metropolitan hospitals. In April Dr. Colin Campbell reported the cure of 2 cases of tuberculous ulcerations, and Dr. A. J. B. Hammond the cure of yet another case of rodent ulcer by radium. In June, Dr. C. M. O'Brien exhibited to the Royal Academy of Medicine in Dublin two cases of lupus, one of which was greatly improved and the other completely cured by radium bromide. I might mention many more cases did time and space permit, but it must suffice to notice that between that date and the present time several British medical men have reported a number of cures of rodent ulcer, of naevus, and of hairy mole. It should also be put on record that in 1903 the Royal Ophthalmic Hospital (Moorfields) was presented, by a patient of the present writer, with two tubes of radium bromide of medium quality, by the use of which some excellent results have since been obtained. Radium emanations have been injected hypodermically into patients suffering from malignant diseases, and even radium bromide itself, in solution, has been so injected by the present writer, without however, any definite beneficial effect.

In this connexion I may mention that in cases of carcinoma in which there occurred very small discrete nodules of this disease, and which therefore offered an opportunity of testing the effect of a small amount of radium, I placed radium in a glass tube directly in contact with these nodules; but even after being applied for varying periods, long enough to produce destructive effects, there was no destruction of the cancer cells Consequently these must be immensely more resistan. to the beta and gamma rays than are those of rodent ulcer and epithelioma.

A few words must be said as to the method I have adopted. The application of radium bromide in sealed glass tubes has the advantages that it completely preserves the radium salt from loss by moisture (a matter of the utmost importance in the present scarcity of radium) and that the glass filters out many of those rays which are most easily absorbed, which are therefore most dangerous to the surrounding tissues and which may lead to burning and sloughing. Moreover, as the radium preserved in this way is in a state of radio-active equilibrium, the dosage necessary is merely a matter of time—the length of application in any particular case being of course determined by experience. The range of action of the radium at the bottom of the tube can be seen by its effect on a photographic plate, or, in the dark, when held in contact with a sulphide of zinc screen, or with willemite. The area of action is much wider than might be imagined. One application to a small rodent ulcer is sometimes enough to effect a permanent cure. But in the case of a comparatively large surface the tube must be moved from point to point, which of course takes time, and is a somewhat tedious process.

As this method has recently been severely criticized in this country, it may be worth while pointing out, first, why this particular method was adopted; and, secondly, what it has been able to effect. As to the first point, it is no exaggeration to say that the glass tube method was practically forced upon early workers with radium in this country, on account of the necessity of avoiding the risk of losing so costly and precious a material, seeing that, if lost, it could probably not be replaced. At any rate, it was not from choice, but from necessity, that this method was adopted by me. I was quite familiar enough with the physical properties of radium to realize fully the advantages that would result if it could be spread over a large surface, with some covering material to hold it, which, while allowing free exit to all the radiations, would preserve the precious material intact. But how to do this is by no means so easy as it may appear to those who have never tried it, and few medical men in this country would feel disposed to lose £500 worth in the attempt. It is interesting to know that this problem of the safe spreading of radium has apparently been solved in Paris, where there exists an institute with over £10,000 worth of radium to experiment with.

But before saying anything about the admittedly great advantages of the spread method, it may be some consolation to those who possess radium bromide in sealed glass tubes, and who may not be able to get it safely spread, if I point out that, in this form, it is not so entirely worthless as they might have been led to believe. Applied in this way by me, it has undoubtedly cured extensive rodent ulcer that had resisted all other treatment; it has cured small epitheliomata; it has cured "spring catarrh" of the eyes (which had resisted other treatment for two years); it has cured recurring erosion of the cornea (Arlt) of one year's duration, and tuberculosis verrucosa.

In addition to these, there is one result obtained by this method of treatment which seems worthy of special record. In common with other early workers with *x* rays, my right hand has suffered from the ill effects of undue exposure, and some time ago an abrasion, produced by a slight injury, presented a rather alarming appearance.

[1] BRITISH MEDICAL JOURNAL, January 23rd, 1904, pp. 181-2.
[2] BRITISH MEDICAL JOURNAL, January 23rd, 1904, pp. 181-2, and *Transactions of the Ophthalmological Society*, vol. xxvi.
[3] Vide BRITISH MEDICAL JOURNAL, January 23rd, 1904, pp. 182-3.

A hard, thickened border, with a black crust, appeared, and when this had persisted for over two years it became somewhat disquieting. It occurred to me to try my glass tube of radium upon it, and the result has been that one application of a tube, containing about 29 mg. of radium bromide, for fifteen minutes led to its complete disappearance. The same favourable result has followed upon other similar applications. This experience may, I hope, be of use to those who have suffered from their work with *x* rays. At any rate, it will be important to know if they also find radium bromide act as a cure.

In the light of practical experience thus obtained I may perhaps say a few words concerning the method of treating skin diseases by means of spread radium in the Laboratoire Biologique de Radium at Paris. There are two great advantages in this method. First, it enables all the radium radiations to come into effective action on the surface to which they are applied. So that all the alpha, beta, and gamma rays may be used, or by the interposition of certain screens all the alpha rays may be cut off, and, if necessary, the beta rays also. A sheet of paper suffices to cut off all the alpha rays; the beta rays may be cut off by aluminium or leaden screens of varying thickness. The quantity and quality of the rays best suited to cure any particular disease can only be arrived at by trial, and much valuable work in this direction has been done at the Paris Institute.[4] But it is a regrettable fact that the varnish used to protect the radium and the method of spreading it are kept secrets.

In all successful cases the remarkable effect is shown that by properly timed exposures the abnormal cells invading the human body are gradually destroyed and absorbed, while none of the normal healthy cells are destroyed. Such being the fact, two questions naturally arise: (1) Which of the radiations produce the beneficial results? and (2) What are the abnormal cells which are more resistant to the radiations than the normal body cells? These questions open up an enormous field for careful investigation.

It must be remembered that radium is not the only radio-active body giving off alpha, beta, and gamma rays. There are other substances which do so, such as thorium and actinium, and doubtless others which remain to be discovered. Another point which should not be forgotten, for it is one of great practical importance, is the fact that radium itself does not directly produce all the rays. It first produces what has been called an *emanation*. The disintegration of this emanation causes it to give out the three types of rays, and the therapeutic action of radium depends mainly on the amount of emanation which it contains. If this store of emanation is driven off by dissolving the radium in water, it proves to be a gas, which, when collected, gives out the same amount of alpha, beta, and gamma rays that it did when unseparated from the radium. But, while the de-emanated radium goes on slowly producing and storing up more emanation until in about one month's time it has regained its maximum strength, the emanation which has been thus separated from its parent, goes on decaying, losing about half its strength in about four days, and becoming in about sixteen days almost powerless. The important practical point to be noted is that the effect of the rays from a given quantity of separated emanation is as powerful as when it was contained in the radium, and that, consequently, it is possible to send a tube of the emanation to be used in the treatment of a case at a considerable distance without any risk of losing the precious radium itself in course of transport.

Should any extensive supply of radium become available, results may be obtained such as we little dream of to-day. At the same time, the hopes we entertain of its further utility must not lead us to outrun discretion by leading unscientific people to think that in this quite-sufficiently-amazing substance we have found a panacea for all the ills that flesh is heir to.

His Majesty King Edward (always thoughtful in promoting the best interests of mankind) has recently initiated a Radium Institute in England, and I trust that this institution, with its ample resources, will do excellent work in this wide field of research.

[4] For full details see paper by Louis Wickham et Degrais, "Traitement des Angiomes (Tumeurs Vasculaires et Taches de Vin) par le Radium," Paris, 1908.

THE METHODS OF FILTRATION AND "CROSSED-FIRE."

[FROM OUR PARIS CORRESPONDENT.]

ONE of the most striking points in the use of radium is the multiplicity of action that can be obtained by the use of one or two apparatus—for example, with a rectangular apparatus 3 cm. by 4 cm., containing 12 cg. of radium (3 cg. pure salt), with A 500,000, therapeutic effects can be directed:

1. To the surface alone, causing violent irritation and destruction.
2. To the surface of the tissues alone without any irritation or destruction.
3. To a depth without irritating the surface or destruction.
4. To a depth, destroying the surface as well as the deeper parts.
5. To the surface and at a depth simultaneously with a strength about the same throughout, and without any destruction of tissue.

Therapeutic results are obtainable from each of these five modes of applications, and each has its utility. If the apparatus is employed without screens, actions 1, 2, or 5 are obtained according to the method used.

If screens are interposed between the apparatus and the tissues, then intermediary actions 3, 4, or 5 are obtained. Amongst these various methods, the most striking are those which produce results at a depth without any alteration of the tissues at the surface—for example, in actions 3 and 5.

The most interesting of the several techniques which give this result are the filtration through thick screens combined with the method named by Drs. Wickham and Degrais "Crossed-Fire."

Dr. Wickham, in 1905, began to filter the radium rays through compressed cotton-wool and then through aluminium, and with Dr. Degrais through lead and rubber. The *x* rays can only traverse thin sheets of aluminium, and are quickly stopped by denser metallic sheets—for example, of lead. The penetrating power of the hard beta and the gamma rays of radium is so great that they can act through a thickness of 3 or 4 mm. of lead. In January, 1907, Drs. Wickham and Degrais first employed the sheets of lead and rubber used in *x*-ray work to protect the operator and the healthy tissues. The case was an inoperable glaucoma, the two apparatuses being applied on the forehead and the temple, a sheet of lead and rubber of 1.28 mm. thickness being interposed between the apparatus and the skin. Thus, all the rays which acted on the surface were stopped, and those of great penetrating power had to traverse the bone to reach the eye. In this case the treatment had little effect on the disease, but was of interest historically, as it led the way to other applications, for soon after Drs. Wickham and Degrais treated in the same way a case of cancer of the breast most successfully; the breast was cured, and during the whole treatment there never appeared any irritation of the skin surface.

Filtration thus has the advantage of allowing the passage of rays which act at a depth without any alteration at the skin surface, but it has the disadvantage of diminishing the sum total of the rays in such proportions that, to obtain a therapeutic result, the applications must be of extremely long duration—from 50 to 200 hours, according to the results to be obtained. By this length of the periods of application the small quantity of very penetrating rays produce in the end a very intense action. For the application of radium for these long periods the apparatus must be convenient, but once the apparatus has been sheathed in its lead casings and it has been ascertained that the radio-activity which passes does not exceed A 4,000 to 5,000, then the apparatus can be left in contact with the skin for several days or nights in succession without the slightest inconvenience to the patient. These very penetrating rays (*surpénétrant*) consist of the hard beta and gamma rays, the lead filter having absorbed the alpha, soft beta, and medium beta rays. Dr. Dominici, the collaborator of Drs. Wickham and Degrais, gave the name "ultra-penetrating" to the

gamma rays, but has since recognized that a large number of the beta rays do also pass the filter.

The drawback due to the feeble *quantity* of these rays which pass the filter has been overcome by Drs. Wickham and Degrais by the adoption of the method of "crossed-fire," the action of the rays resembling a bombardment by batteries at two points facing each other. Thus if two apparatus are placed facing each other on opposite sides of a tumour, these very penetrating rays traverse the tumour in both directions and cross in the centre. The cells are thus doubly acted on, and are modified much more rapidly. If two powerful apparatus of activity 2,000 to 4,000, enveloped each in a sheath of lead 1 mm. thick, are applied, they can be fixed, without any risk or irritation, to the skin surface, and left *in situ* during five or six nights running; but the cells at a depth are acted on by an intense force, which Drs. Wickham and Degrais found was more than double the force of each apparatus taken alone, the "crossed-fire" having increased the intensity of the effect produced on the cells placed deeply, because during a short period the cell is attacked by the double force.

Conclusions.

1. The system of filtration devised by Dr. Wickham permits the separate action of the very penetrating rays.
2. The feeble quantity of these rays is compensated:

   (*a*) By the long durations of the applications which are facilitated by the ease of the applications.

   (*b*) By the method of "crossed-fire," which diminishes the duration of the necessary applications, because they considerably increase the action of the very penetrating rays.

3. These methods allow of action at a great depth without any alteration of the surface.
4. All affections which spread at a depth, as *cancer*, cheloids, angiomatous tumours, even if situated below the skin, can all be treated by these methods.
5. These results render radium superior to the *x* rays, which cannot act, either at such a depth or during such a lengthy period, or as conveniently, or with such security for the integrity of the skin surface.

Clinical Cases.

The following clinical observations illustrate the method of filtration combined with the "crossed-fire."

I. Case of an enormous cancerous tumour of the parotid, presented to the Société Médicale des Hôpitaux November 6th, 1908. The patient came to Drs. Wickham and Degrais on August 18th, 1908, the tumour making a projection of 4.8 to 5 cm. at different points, and spreading in width for a space of 9.5 cm. from the ear to the inner quarter of the cheek; its vertical measure was 11 cm. The surface was mammillated, and it was completely covered by the skin except at its most prominent point, where recent ulceration was started. The skin was red, violet in places, and stretched; it was impossible to fold it, and it looked like the skin of an orange; a rich venous plexus ran over the surface. The voluminous mass had raised the cutaneous covering, and presented at its margin a very distinctly accentuated demarcation; there was scarcely any transition between the diseased and healthy tissues. The tumour was firmly adherent to the subjacent tissues, and it was hard, like plaster. The tumour, in spite of its site (it enclosed the region of the facial nerve), and in spite of the extreme tension of the tissues, did not cause any pain; there was some glandular enlargement behind and below the angle of the lower jaw. Dr. Duprey, of Château-Chinon, wrote that the patient, whom he had known for twenty years, had had a tumour of the parotid, which he considered a fibroma, for fifteen years, and that eighteen months previously it had suddenly developed rapidly, and taken on a malignant character. Microscopic examination by Dr. Dominici showed it to be a lobulated epithelioma, with cells with budding nuclei; numerous cells showed ordinary and multipolar karyokinesis; there was little production of horny substance. Treatment was begun at once, based on the principle of the "crossed-fire," by introduction of tubes of radium into the interior of the tumour; apparatus were also applied externally, so that the crossing of the rays was fourfold. By these methods, and by changing the position of the apparatus, Drs. Wickham and Degrais were able, while respecting the surface, to act with extreme force in the depth of the tumour. After eleven weeks' treatment the tumour had retrogressed so much that its thickness was only 1.5 cm., its vertical and transverse diameters being also much reduced. The tumour became quite mobile on the subjacent tissues and was no longer hard; the lymphatic glands, which had also been treated, showed no more threatening points. At the present time the patient is cured.

II. *Cancer of the Breast.*—Three cases treated by the same process. The apparatus were covered with 2 mm. of lead and placed on the breast to be treated to the number of four, two by two on opposite sides; they were left in place twelve hours each time on alternate nights. The activity of each apparatus was 2,000 to 3,000. Their size varied from 12 to 20 sq. cm. of surface. They were slightly changed in position at each application, so that the skin surface ran no risk. A first series of applications consisted of ten nights. After a month's rest, a fresh series of ten nights; again a month's rest, followed by a third series. From the first month there was great improvement, the suppleness returned, the tumours were no longer adherent, the regression was progressive. About the fourth month, nothing remained of the cancers.

III. *Cancer of the uterus*, with invasion of the lymphatic glands. An apparatus was fixed in the vagina against the uterus; four apparatus were placed on the abdominal wall, two to the right and two to the left side. The pains ceased quickly and the tumours retrogressed. The amelioration was evident, and towards the third month by abdominal palpation it was impossible to detect any hardness, and haemorrhage and the discharge had stopped. The vegetations at the cervix disappeared and the uterus regained its suppleness. The cancer, which had been inoperable and was despaired of, became operable. The patient was operated on and has since remained in good condition.

IV. *Carcinomatous tumour in the neck*, causing compression of the nerves of neck, severe pains and immobilization of the head. During the first month the treatment caused cessation of the pains, and the head again became mobile. In the third month the patient could turn the head without discomfort, and the tumour, which had been inoperable and despaired of, had diminished by half. The treatment is still being continued, but the result already obtained is very interesting.

THE REPORT OF THE CORONER FOR THE CITY OF LONDON.

THE report of Dr. Waldo, Coroner for the City of London, on his work during 1908, which was presented to the Court of Common Council on February 25th, presents several points of interest.

Inquests.

The total number of inquests held was 418, including non-fatal fire inquests. These were distributed as follows: For the City of London, 194 deaths (142 males and 52 females), or 4 more than in the previous year. For the Borough of Southwark, 221 deaths (146 males and 75 females). The Coroner also inquired into other deaths notified to him, but after preliminary inquiries decided that formal public inquests were unnecessary. In the City of London there were 20 such deaths, as against 12 during 1907; and in the Borough of Southwark 64 such deaths, as against 60 during 1907. In 136 cases the Coroner's jury were satisfied that death was due to an ascertained natural cause as against 141 in 1907, while in 279 cases the cause of death could not be described—that is, it was either proved to be not natural, or the evidence was not sufficient to show whether it was natural or otherwise. Of the 279 deaths from other than natural causes 199 are accounted for by accident, as against 212 during 1907. It may be noted that 37 fatalities were due to vehicles, of which 9 in the City and 13 in Southwark were drawn by horses, and 12 in the City and 3 in Southwark were motor drawn.

There was an increase under the class "Suicide," and a decrease under the class of "Children suffocated whilst in bed with their parents or others." Inquests were held on the bodies of 10 infants suffocated whilst in bed with their parents, as against 23 in 1907. During the year there were 29 verdicts of self-destruction while insane, and 10 of self-murder or *felo-de-se*, while in 1907 there were 22 verdicts of self-destruction and 6 of suicide or *felo-de-se*.

Of the deaths attributable to "neglect, exposure or excess," 9 in number, only 5 (2 males and 3 females) were found by the jury to be directly due to disease caused by excessive drinking. In 1907 the number of deaths attributable to that cause was 14. In a considerable number of "natural" and "accidental" deaths, however, there was ground for believing that intemperance was a contributory factor.

Deaths under Anaesthesia.

Dr. Waldo states that a tentative measure in the shape of a proposed General Anaesthetics Bill is now under the consideration of the Privy Council and Home Office, which

bill limits the administration of anaesthetics to registered medical practitioners, and requires that all candidates before presenting themselves for their final medical examination shall have received thorough theoretical and practical instruction in anaesthetics under the supervision and to the complete satisfaction of their respective teachers. He thinks it has been conclusively shown (*a*) that present available data as to deaths during anaesthesia are so imperfect as to be useless for the purposes of formal investigation, and that it is highly desirable to arrive at satisfactory conclusions regarding all deaths under anaesthesia, both for the safety of the public and for the furtherance of scientific knowledge. At the request of a jury he sent in a rider at the latter end of 1907 to the authorities of a large and important general hospital in South London concerning the death of a young married woman who died under an operation from heart failure due to the administration of an anaesthetic known as chloroform. The rider was to the effect that:

Whilst no blame is attached by the jury to the administrator considering his limited experience, they recommend (1) that in all operation cases of a serious nature anaesthetics should be administered either by a staff anaesthetist or by a resident under his immediate supervision; and (2) that full statistical tables as to anaesthetics should be kept by the hospital authorities.

The receipt of this communication (the Coroner continues) was followed by an inquiry at the hospital in question, and the fact may be noted that, whereas 11 deaths under anaesthetics were reported to him during 1907, only 1 such death from the same hospital was reported during the year under report (1908). He points out, however, that it would be unsafe to draw conclusions from small numbers and from a single year.

The actual figures for past years in this particular institution were as follows:

Year.	Deaths under Anaesthetics.
1901 half year	2
1902 whole year	7
1903 ,, ...	2
1904 ,, ...	7
1905 ,, ...	2
1906 ,, ...	7
1907 ,, ...	11
1908 ,, ...	1*

* Inquest held January 7th.

With the view of lessening the numbers of what he regarded as unnecessary deaths under anaesthesia, the following recommendations were made by Dr. Waldo:

1. That no general or local anaesthetic shall be administered by any but a duly qualified medical man, except under most exceptional circumstances, which shall be duly reported to some recognized official authority.

2. That full details be reported by the anaesthetist of all administrations of anaesthetics, whether in hospital or in private practice, including date, name and address of patient, of operator and of administrator, nature of operation, the drug used, and other pertinent details.

3. That a register of all administrations of anaesthetics be kept in all medical charities, Poor Law infirmaries, and other public institutions.

4. That, so far as possible, special skilled anaesthetists be appointed to all hospitals and infirmaries, and that resident anaesthetists be provided in the larger institutions.

5. That when the administration of an anaesthetic is entrusted to a junior qualified man he should be supervised by a skilled anaesthetist, except where he can produce a certificate of special skill and experience as an administrator, or where a skilled anaesthetist is not available.

6. That notification be made to the coroner of all deaths occurring at any stage of general anaesthesia by the anaesthetist or by others concerned.

7. That coroners be required to hold a public inquiry into all cases of death during anaesthesia, and that they make a detailed report to the Registrar-General, together with the verdict.

8. That a Royal Commission, with advisory powers, might with advantage be appointed to inquire into the present facts of deaths under anaesthesia, together with the official machinery available for registration.

The Departmental Committee appointed by the Secretary of State to inquire into coroner's law and practice, now sitting, is taking evidence on deaths under anaesthetics.

Poisons and Pharmacy Act.

Another point touched upon by Dr. Waldo is the working of the Pharmacy Act. He says that a new Poisons and Pharmacy Act, which passed during the last session of Parliament, will come into force on April 1st. By this Act restrictions are for the first time placed on the sale of poisonous substances, such as hydrochloric, nitric, and sulphuric acids—a reform often suggested to the Home Office by City juries. He points out, however, that no mention is made of the equally poisonous liquid ammonia or of bichromate of potash, notwithstanding the fact that cases of accidental poisoning by both these substances have been brought to the notice of the Home Secretary by Dr. Waldo, with recommendations from juries that they be made subject to regulation as scheduled poisons. A particularly sad case in point, that of a girl aged 15 years, was investigated by him in 1908. Her death was caused by eating a piece of the salt of bichromate of potassium in the belief that it was a sweetmeat.

Protection of Infant Life.

Dealing with the protection of infant life, the coroner refers to the Children Act, 1908, which will come into force on April 1st, 1909. Amongst other matters, it renders punishable the exposure of a child under the age of 7 years to an inefficiently guarded fire.

The importance of this matter may be at once seen, says Dr. Waldo, when the fact is known that he has held inquests during the past year on 24 children, as against 19 in 1907, under the age of 7 years who were burnt or scalded to death owing, in a large majority of the cases, to the child having been carelessly left alone in a room containing an open fire grate without guard. In a few of these cases the cause of death was due to the child having been left alone with matches lying about.

So far as overlying is concerned, he thinks the Act certainly does not err on the side of severity. The recommendation of the Coroners Bill was that mere suffocation of an infant in bed should be regarded as evidence of neglect, but the Act has made it punishable only when proof is obtained that the parent or guardian was under the influence of drink, evidence of which, so far as he can see, it will be almost impossible to obtain in any court of law.

Identification of Dead Bodies.

Dr. Waldo states that, as regards the better identification of dead bodies, the matter has recently been settled by the determination of the Court of Common Council to instal at the City mortuary an apparatus similar to that in use at Brussels for the preservation of bodies by the agency of formalin.

THE fourth Latin-American Congress will be held this year at Rio de Janeiro. In connexion with the Congress there will be an International Hygienic Exhibition, which will be open from August 1st to September 30th. Communications relative to the exhibition should be addressed to the General Secretary, 7, rua Uruguayana, Rio de Janeiro.

DURING the year 1908 the total number of bodies disposed of by cremation in Germany was 4,050 as against 2,977 in 1907, showing an increase of 1,073, or 36 per cent. The figures for the crematories at Bremen, Chemnitz, Coburg, Gotha, Hamburg, Jena, Karlsruhe, Mainz, Mannheim, Offenbach-on-the-Main, Possneck, Stuttgart, and Ulm are all larger than those in the previous year. At Eisenach, Heidelberg, and Heilbronn there was a slight diminution. Among those whose remains were cremated were 1,474 females. The classification according to religious creeds gives some interesting results: Lutheranism stands at the head with 3,236 cases: 299 are described as Roman Catholics, 35 as Old Catholics, 153 as Jews, 72 as "free-religious," 49 as Dissenters, while 9 are described as belonging to other sects. In 197 cases no mention was made of creed. From these figures it appears that while the enormous majority of persons cremated were described as Lutherans, there was a considerable body of Catholics, notwithstanding the prohibition issued, we believe, by Leo the Thirteenth. For some reason, in Germany, as in France, cremation does not seem to appeal to free thinkers. In 2,517 cases, all coming under the head of Lutherans the incineration was accompanied by religious rites.

Medical News.

THE "E. M. I." (Études Médicales Internationales) has arranged this year to visit the medical schools of England, Scotland, and Ireland.

DR. WEIR MITCHELL of Philadelphia, the distinguished neurologist, who has also won fame as a novelist, celebrated his 80th birthday on February 15th.

THE lectures arranged by the National League for Physical Education and Improvement to be given on March 4th and 11th have been unavoidably postponed.

THE Association Générale des Médecins de France will formally celebrate the fiftieth anniversary of its foundation in April. It came into existence on August 30th, 1858.

THE next dinner of the Irish Medical Schools' and Graduates' Association will be held at the Hotel Cecil, London, on Thursday, March 18th; Lord Ashbourne will be the guest of the evening.

THE direction of the Hygiene Exhibition, to be held at Dresden in 1911, has been entrusted to Dr. O. Neustätter, co-editor of the *Gesundheitslehrer*, a journal which is largely devoted to the exposure of quacks.

ON Tuesday next at 8 p.m., Dr. A. Harden, F.I.C., of the Lister Institute of Preventive Medicine, will read a paper on the relations to pharmacology of some recent advances in biological chemistry, before the Pharmaceutical Society of Great Britain.

M. MESUREUR, Director of Public Assistance in Paris, has paid English nursing a remarkable compliment by arranging that four French nurses should have a short course of practical training at St. Bartholomew's Hospital.

THE annual conversazioné of the West London Post-Graduate College will be held at the hospital on Wednesday, March 24th, at 8.30 p.m. All past and present members of the college are cordially invited, and an invitation will be sent to any medical man applying to the Dean at the hospital.

THE University of Edinburgh will, at the approaching Spring Graduation, confer the honorary degree of LL.D. on Emeritus Professor Alexander Crum Brown, till lately Professor of Chemistry in that University; and on Surgeon-General Sir A. Keogh, K.C.B., Director-General of the Army Medical Service.

ARGYLLS LIMITED, the company which makes the Argyll motor cars, has recently undergone reorganization, and proposes shortly to open a dépôt in London, which will be under the direct control of the management of the works at Alexandria by Glasgow, to which address for the present all communications should be sent.

THE Colonial Office has issued a revised edition of the the Memorandum on Medical Appointments in the Colonies, and also of the pamphlet entitled Information for the Use of Candidates for Appointment on the West African Medical Staff. Inquiries should be addressed to the Assistant Private Secretary, Colonial Office, Downing Street, S.W.

AN ophthalmic exhibition will be held on Friday and Saturday, March 12th and 13th, from noon to 10 p.m. each day in the rooms of the Medical Society of London. Its object is to bring under notice the latest models and improvements and a number of optical firms of repute will show apparatus and instruments. Particulars can be obtained on application to Mr. Ernest Schofield, 11, Chandos Street, London, W.

A PROVINCIAL sessional meeting of the Royal Sanitary Institute will be held in the University, Sheffield, on Friday, March 12th, and Saturday, March 13th. On the first day a discussion on medical inspection and its relation to the home life of children will be opened by Dr. Ralph P. Williams, School Medical Officer, Sheffield, and on the following day inspections will be made of the Plenum system of ventilation, new sewage works, and a smoke prevention exhibition.

FOLLOWING out the line of action adopted by the North Northumberland Division of the British Medical Association, the members of the West Penwith Medical Society, Penzance, mainly composed of members of the British Medical Association, passed the following resolution at a meeting held on February 24th: "That this Society unanimously disapproves of midwives engaging to attend cases for whom a medical man has not been engaged to attend, and they desire to point out to all nursing associations in West Penwith that they have unanimously resolved that they will not hold themselves responsible for attendance on such cases."

SIR THOMAS R. FRASER AND DR. JAMES A. GUNN reported recently to the Royal Society the result of experiments made in the Pharmacology Laboratory of the University of Edinburgh on the action of the venom of the South African *Sepedon haemachates*. Its primary and greatest effect was found to be upon the respiration. In mammals death was due to respiratory failure produced by paralysis of the respiratory centre, the excitability of the phrenic nerve ends being practically unimpaired. The venom also had a marked enfeebling action on the brain and spinal cord, and little, if any, effect on the motor nerve endings. The effects of the venom on the circulation were found to be of minor importance compared with those on the respiration.

A WELL-ATTENDED meeting of the medical officers and dental surgeons attached to the Metropolitan Provident Medical Association was held at the head office, 5, Lamb's Conduit Street, on Tuesday. Mr. Francis Buxton, Chairman of the association, presided, and there were also present Sir William Bousfield, Mr. C. G. Montefiore, Mr. A. L. Leon, Mr. W. E. Darwin, and Colonel Fellows, representing the Executive Committee. A resolution was unanimously passed approving of the action of the association in bringing to the notice of the London County Council the work and aims of provident dispensaries. It was also resolved: "That in the event of the London County Council applying to the Metropolitan Provident Medical Association to undertake the medical treatment of school children through the provident dispensaries of London, the medical officers would heartily co-operate with the association, and would do everything possible to meet the requirements of the educational authorities." A medical committee, consisting of Drs. G. Michael, S. Wilson, H. H. Sturge, H. Taylor, J. A. P. Barnes, G. M. Bluett, and Messrs. C. N. Bayfield and H. A. Matheson, dental surgeons, with power to add to their number, was formed to assist the Executive Committee in arranging the details of any scheme of co-operation which may be suggested between the provident dispensaries and the London County Council.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on February 19th, Dr. de Havilland Hall in the chair. The accounts presented showed that the operations of the society in January were more than usually successful. The amount of new business obtained was not so great as in January, 1908; but last year was a record in this respect, and some diminution of numbers in this item was to be expected. On the other hand, the sickness experienced was less than the average expectation; the claims received were for the most part of short duration, and, as more than one of the chronic cases have lately been removed by death, the sickness was not so heavy as at this time last year. The threatened epidemic of influenza seems to have nearly, if not entirely, disappeared, and the claims on the society this year so far have arisen mainly from the throat and chest affections to which medical men are specially subject in severe weather. At the annual general meeting of the members, to be held at the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, London, W., on May 27th, at 4.30 p.m., a satisfactory report will be presented. It will show that in the year 1908, more new members were obtained than in any previous twelve months of the society's working; and that the sickness branch, in which alone new business is now transacted, obtained a substantial addition both to the number assured and the amount of the financial reserves. Prospectuses and all further information on application to Mr. F. Addiscott, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, London, W.C.

LITERARY NOTES.

IT is announced that it is proposed to publish a short life of the late Sir William Broadbent. Lady Broadbent will be grateful if any one who has letters from him of general interest will kindly allow her to see them. They should be sent to her at 9, York Terrace, Regent's Park, London, N.W., and will be returned as soon as possible.

To the March number of the *Cornhill Magazine* Mr. Leonard Huxley contributes an article on the author of the *Origin of Species*. In it he speaks of the occasional intractability of Darwin's pen, which called forth the following humorous criticism after a re-reading of the *Origin*:

Exposition was not Darwin's *forte*, and his English is sometimes wonderful. But there is a marvellous sagacity about

him—like that of a sort of miraculous dog—and he gets to the truth by ways as dark as those of the heathen Chinee.

We suppose this quotation is from Thomas Henry Huxley. An account of Darwin's method of composition may be interesting. In his life of his famous father, Mr. Francis Darwin says that in writing a book Charles Darwin would spend much time and labour in making a skeleton or plan of the whole, and in enlarging and subclassing each heading. In his *Life of Erasmus Darwin*, as it was first printed in slips, the growth of the book from a skeleton was plainly visible. The arrangement was altered afterwards, because it was too formal and categorical, and seemed to give the character of his grandfather rather by means of a list of qualities than as a complete picture. It was only within, says Mr. Francis Darwin, the last few years that he adopted a plan of writing which he was convinced suited him best—namely, writing a rough copy straight off without the slightest attention to style. It was characteristic of him that he felt unable to write with sufficient want of care if he used his best paper, and thus it was that he wrote on the backs of old proofs or manuscript. The rough copy was then reconsidered, and a fair copy was made. For this purpose he had foolscap paper ruled at wide intervals, the lines being needed to prevent him writing so closely that corrections became difficult. The fair copy was then corrected, and was recopied before being sent to the printers. Then came the work of revising and correcting the proofs, which his father found especially wearisome. It was at this stage that Darwin first seriously considered the style of what he had written. When this was going on he usually started some other piece of work as a relief. The correction of slips consisted in fact of two processes, for the corrections were first written in pencil, and then reconsidered and written in ink. When the book was passing through the "slip" stage he was glad to have corrections and suggestions from others. Mrs. Darwin looked over the proofs of the *Origin*. In some of the later works his daughter, Mrs. Litchfield, did much of the correction. After his sister's marriage, most of the work fell to Mr. Francis Darwin's share. Mrs. Litchfield says that her father did not write with ease, and was apt to invert his sentences both in writing and speaking, putting the qualifying clause before it was clear what it was to qualify. He corrected a great deal, and was eager to express himself as well as he possibly could. Perhaps, says his biographer, the commonest corrections needed were of obscurities due to the omission of a necessary link in the reasoning—something which he had evidently omitted through familiarity with the subject. Not that there was any fault in the sequence of the thoughts, but that from familiarity with his argument he did not notice when the words failed to reproduce his thought. He also frequently put too much matter into one sentence, so that it had to be cut up into two. On the whole, Mr. Francis Darwin thinks the pains which his father took over the literary part of the work was very remarkable. He often laughed or grumbled at himself for the difficulty which he found in writing English, saying, for instance, that if a bad arrangement of a sentence was possible he should be sure to adopt it. He once got much amusement and satisfaction out of the difficulty which one of the family found in writing a short circular. He had the pleasure of correcting and laughing at obscurities, involved sentences, and other defects, and thus took his revenge for all the criticism he had himself to bear with. He used to quote with astonishment Miss Martineau's advice to young authors—to write straight off, and send the MS. to the printer without correction, but in some cases he acted in a somewhat similar manner. When a sentence got hopelessly involved, he would ask himself, "Now, what *do* you want to say?" and his answer written down would often disentangle the confusion. His style has been much praised; on the other hand, at least one judge remarked that it was not a good style. Mr. Francis Darwin says of it:

> It is, above all things, direct and clear; and it is characteristic of himself in its simplicity, bordering on naïveté, and in its absence of pretence. He had the strongest disbelief in the common idea that a classical scholar must write good English; indeed, he thought that the contrary was the case. In writing he sometimes showed the same tendency to strong expressions as he did in conversation. Thus, in the *Origin*, p. 440, there is a description of a larval cirripede, "with six pairs of beautifully constructed natatory legs, a pair of magnificent compound eyes, and extremely complex antennae." We used to laugh at him for this sentence, which we compared to an advertisement. This tendency to give himself up to the enthusiastic turn of his thought, without fear of being ludicrous, appears elsewhere in his writings.

As for ourselves, we think Darwin's style, with its simplicity and absence of "fine writing," almost perfect for the object he had in view. The pains he took to express his ideas clearly should be a lesson to all scientific writers.

THE RADIUM INSTITUTE.

OFFICIAL STATEMENT.

WE have received the following official statement for publication:

His Majesty the King has been graciously pleased to become the Patron of the Institute.

The following additions have been made to the Committee: The Hon. Walter E. Guinness, M.P., as the representative of Lord Iveagh; Felix Cassel, Esq., K.C., as the representative of Sir Ernest Cassel.

A site has been acquired in Riding House Street, Portland Place, upon which the necessary building will be erected with as little delay as possible. The architect is T. P. Figgis, Esq., F.R.I.B.A.

In general terms, it may be said that the Institute will be conducted upon the lines of the Radium Institute in Paris. In addition to the superintendent, the assistant to the superintendent, and the director of the laboratory, there will be an honorary medical and surgical staff (not yet appointed).

The Institute hopes to acquire radium to the amount of 5 grams.

The treatment carried out in the Institute will be strictly limited to treatment by radium or other radio-active substances. Treatment of cases by the Roentgen rays, the Finsen light, and by electrical currents will have no place in the Institute, as such measures of treatment are already very amply provided for elsewhere.

The building will be in two parts, with separate entrances. One section will be devoted to necessitous patients, and the other to the well-to-do. The former will be treated free; the latter will be required to pay fees on such a scale as the medical and surgical staff may determine.

Necessitous patients must bring a certificate from a medical practitioner stating the nature of the case and the fact that the individual is unable to pay for any necessary treatment.

Well-to-do patients should, whenever possible, be accompanied by the medical practitioner under whose care they are. Failing such personal attendance, each patient must bring a letter, stating the particulars of the case, from his or her medical adviser.

Indeed, no patient, poor or well-to-do, will be treated in the Institute except upon the imprimatur of a qualified medical man.

It is hoped that medical practitioners will associate themselves with the specific treatment carried out at the Institute on their individual patients.

Demonstrations in the use of radium will be given, and medical practitioners can be advised as to the mode of employment and as to the radio-activity of their own specimens of radium.

Further particulars will be published at a later date.

British Medical Journal.

SATURDAY, MARCH 6TH, 1909.

THE TREATMENT OF CANCER.

THE scientific surgeon cannot yet sigh, like Alexander, for fresh realms to conquer. Since the principles of the treatment of wounds laid down by Lord Lister have been generally adopted, his knife has invaded nearly every part of the body, and has dealt successfully with many forms of disease which used to be regarded as inevitably fatal. But cancer still to a large extent remains the mere despair of surgery. Operations are, indeed, done for malignant disease which could not justifiably have been attempted in pre-antiseptic days; technical details have been perfected, and many satisfactory results have been recorded. But a cure that can safely be called definitive is extremely rare, and the causation of the disease, without which effective treatment is impossible, has not yet revealed itself to the many keen eyes that are eagerly striving to penetrate the mystery which surrounds its origin. The labours of the investigators engaged in the search have certainly not been fruitless; much has been learnt about the mode of development and dissemination of the disease, its manifold varieties, and the ultimate fate of its constituent elements. But even if it be assumed that there is a fallacy in the belief which often finds expression, that the prevalence of cancer is increasing, it must be admitted that no reduction in the death-rate from the disease has yet been effected. It is also still true as a general proposition that a diagnosis of cancer virtually means a death sentence to the sufferer. This fate may overtake him swiftly, or may follow him with the halting but untiring foot which the poet gives to justice; but, unless he has the good fortune to be cut off by some more merciful ailment before his enemy comes up with him, in the end the disease is pretty sure to run its quarry to death. In the meantime the victim lives under the shadow of a dark foreboding:

> Like one that on a lonesome road
> Doth walk in fear and dread,
> And, having once turned round, walks on,
> And turns no more his head;
> Because he knows a frightful fiend
> Doth close behind him tread.

While it is one of the worst forms of cruelty to delude those under the doom of cancer with hopes of cure, it is the duty of the medical profession to work steadfastly at the problem. It must not allow itself to fold its hands and acquiesce in failure. "Impossible!" Napoleon used to say; "never utter "that fool of a word before me." The saying might well be the motto of those who give themselves to cancer research. There are signs which appear to indicate that, if we are not yet near a final solution, we are at last on a path that may lead to discovery of the secret so long and so jealously hidden.

It is in the hope of encouraging all practitioners of the healing art to fresh efforts in the struggle against cancer that we publish in the present issue several papers in which the subject is dealt with from different points of view. Sir Hector Cameron rightly holds that while the pathologists are hard at work, it is equally incumbent upon those whose experience has been wide enough to make known the lessons which it has taught them. The publication of operations while the surgeon's knife is yet, figuratively speaking, dripping with blood, is not only misleading, but calculated to bring surgery into contempt. But the fruits of an experience extending over forty years and ripened by ever-growing knowledge, are beyond all price. Unfortunately this is just the kind of information which it is most difficult to procure. The profession, therefore, owes a debt of gratitude to Sir Hector Cameron for supplying such valuable material from his carefully garnered store. One point which must strike every reader of his address is that he has shaken himself free from the trammels of classical teaching as to what constitutes a cure. As he well says, cancer is one of the most contradictory of all diseases. It refuses to be bound by any formula in regard to the period of time beyond which recurrence may be regarded as unlikely. Some of his cases strikingly show the untrustworthiness of the three-year limit. In one of them the patient, after living free from the disease for twenty-seven years, was again attacked, but survived a second operation five and a half years. In another there was no recurrence for nearly twelve years, and then the disease appeared in an unrelated part of the body. In a third case no recurrence took place in the part first affected, but nearly nine years later the corresponding organ was invaded; more than two years have now elapsed without any further development. Other cases are cited by Sir Hector Cameron in which recurrence took place many years after removal. It may be a question whether in these cases the later outbreak of the disease was connected with its original manifestation. Not so long ago the surgeon would have thought the matter settled by saying that the patient had a cancerous diathesis. Sir Hector Cameron, with the modesty born of the true scientific spirit, does not think he has solved the question in this easy fashion. He admits the possibility of a second invasion, but in other cases—notably in that of the patient who lived nearly thirty-three years after the first operation—he thinks the later growth sprang from a residue of the first one traversing the subpectoral fascia. But, as he says, we do not know why it remained so long inactive; "we neither understand its long sleep nor its "awakening." He uses these cases to point the moral that "whether we operate obviously late in the "disease, whether by limited or extensive removals, "we must remain uncertain of the results."

Another instructive point is brought out by Sir Hector Cameron when he relates cases showing that a mammary cancer may produce extensive involvement of the lymphatics before it is of a size which renders it demonstrable. He concludes that *a fortiori* a tumour so small that it has but recently attracted the patient's attention must not be looked upon as necessarily a very favourable one for operation. As he pithily puts the matter, "small size and recent origin "are by no means convertible terms." Sir Hector Cameron discusses with commendable frankness another aspect of operation for cancer—that is to say, its possible effect in promoting what he calls "destructive dispersion" of the disease. There are cases in which this result seems to be fairly attributable to the operation, and as he says, "the clinical fact

"is enough to make us, as far as possible, avoid all "undue pressure upon and squeezing of the tumour, "whether during diagnostic manipulation or during "the operation for its removal."

Sir Hector Cameron's experience comprises a good many examples of the disappearance and cure of cancerous lesions quite apart from any treatment; he says that in these, for some inexplicable reason, dissemination does not reach internal organs. The key to the mystery here referred to by the distinguished Glasgow surgeon is, we think, furnished by Mr. Sampson Handley, in whose most interesting lecture on the Natural Cure of Cancer the doctrine that "the progress "of a cancer is normally accompanied by retrogressive "or curative processes" is elaborated and illustrated. The natural history of a cancer is, he says, one of centrifugal growth followed by centrifugal death. Unfortunately for the patient, in most cases the self-curative process fails to overtake the centrifugal spread or permeation, and so fails to arrest the march of the disease. In fact, the patient dies before the disease has time to cure itself. But this does not happen in all cases, and Mr. Sampson Handley shows that there is a gradation in destructiveness in cancers of different types, ranging from the medullary carcinoma of young people, in which the cells possess a high degree of proliferative power, to the atrophic scirrhus of old people, whose connective tissue is poor in cells and the cancer is of low proliferative power. The natural local cure of cancer is, according to Mr. Handley, brought about by fibrotic processes which cut off the cancerous epithelium from the contact with connective tissue cells which is necessary to maintain its vitality. As we understand him, it is this process of perilymphatic fibrosis which, if completed in time, prevents dissemination of the cancer. An attentive study of Mr. Handley's paper can scarcely fail to convince any reasonable person of the futility of most of the methods of treatment by which cancer has been said to be cured. As he says, "the "literature of cancer therapeutics does not contain "the record of a single fact which cannot be paral- "leled among the histories of untreated cases." He thinks, however, that the x rays have an effect in promoting the natural tendency to fibrosis in masses of malignant tissue. Mr. Sampson Handley has seen great apparent benefit, in patients suffering from cancer, result from a change of residence from town to country, and he thinks the open-air treatment may be worthy of trial in the more chronic cases of inoperable cancer. But he warns us that in no circumstances whatever should the treatment be recommended as a substitute for operation when surgical intervention is possible.

The spontaneous disappearance of tumours in mice after successful inoculation has been recorded by Dr. Bashford, and examples occurring in the human subject have been reported by Mr. Pearce Gould, Mr. Langlow, Mr. H. J. Waring, Mr. Bruce Clarke, and others. Dr. Bashford has shown that the activity of cancer cells waxes and wanes, and that they are much more vulnerable in the negative phase through the increased resistance induced in the soil. Dr. Bashford foresees a still remote possibility that dissemination from the primary focus may be hindered, but he sees no probability that the primary focus will be got rid of by other means than early surgical removal.

The knife, used before it is too late, is still, therefore, the only method from which satisfactory results can be expected, unless it be in the very exceptional cases in which Nature may heal without the help of surgery. These researches, however, seem to point the way to the discovery of some means whereby Nature may be assisted in working the "miracle of cure."

Holding to the principle that everything offering a reasonable prospect of alleviation in so intractable a disease should be made known, we publish some cases in which Dr. Fenwick of Accrington records good results from the use of potassium bichromate. The diagnosis in most of them is based on examinations made by the Clinical Research Society. We have satisfied ourselves that the cases are reported in good faith. They might with advantage have been related in fuller detail; but, such as they are, we think it our duty to present them to our readers.

THE LONDON UNIVERSITY, THE COLLEGES, AND THE MEDICAL FACULTY.

We are enabled this week to publish a report by a strong joint committee presented to the Royal Colleges of Physicians and Surgeons in London, and adopted by those colleges shortly before Christmas, propounding a scheme for establishing a system of conjoint examinations between the Royal Colleges and the University. The report would appear to have been drafted before it was known that the Senate of the University intended to ask for a Royal Commission, and it is therefore in the main directed to indicating the way in which the proposal might be carried out under the existing statutes of the University.

The report expresses the opinion that it is desirable that the system of teaching and examination in London should be so co-ordinated as to reduce the number of examinations, and points out that the general character of the examinations of the University and of the Conjoint Board is very similar. The suggestion is that the Royal Colleges should be associated with the University in conducting the preliminary scientific, intermediate, and final examinations for the pass degrees of M.B., B.S., and M.D., leaving to the Colleges the right to grant diplomas to persons ineligible or not desiring to obtain degrees, and to the University its existing rights as to the granting of degrees, while asking it to exercise them as regards its pass degrees conjointly with the Royal Colleges so far as students who have been at least four years in London are concerned. It will be seen that these proposals involve the assumption that the University will grant honours degrees in medicine and surgery, and there can be no valid objection to them on this score. The concluding paragraph of the report states that the Royal Colleges will lay their views before the Royal Commission, and also ask the University to appoint delegates to discuss the question, so that if possible the representations made to the Royal Commission may be joint representations of the Colleges and of the University. The scheme as set forth in the report is, of course, a mere outline, though it ought not to be very difficult to fill in its details; but we again venture to say, at the risk of wearying by repetition, that unless the University can be induced or compelled to substitute for its present matriculation examination one arranged on more practical lines, and in harmony with the conditions imposed on the public and other secondary schools by the regulations of other universities and of the public services, no scheme can be expected to succeed in placing within the reach

of the majority of London students a degree in medicine. Granted that sufficient attention is directed to this point in the representations made by the Colleges to the University and to the Royal Commission, it seems reasonable to hope that the long-desired co-operation which the existing statutes authorized the University to bring about, and which it has failed to bring about, may become an accomplished fact.

It was mentioned a fortnight ago that a memorandum was in course of circulation outlining a scheme for the formation of a Faculty Board to act as the representative committee of the Medical Faculty of the University. The text of this memorandum and of the resolution to be proposed at the meeting of the Faculty on Friday will be found on pp. 636, 637, and it will be observed that the resolution is to be proposed and seconded respectively by two members of the Faculty who may, perhaps, be said to represent opposing parties. When the University was reconstituted ten years ago, Boards of Studies composed of teachers were appointed with a view to carrying out one of the many objects of the reconstitution, which was to give to the teachers their due influence in the determination of the curricula and examinations, and so to make the University a teaching body. The general assemblies of the Faculty were given practically no power beyond that of electing to the Senate a certain number of members who were also members of the Academic Council. The recommendations of the Boards of Studies were not to be considered by the Senate until after they had been reported upon by the Academic Council in the case of internal students, as the vast majority of medical students are. The Academic Council consists of representatives of all the Faculties, and it has become customary to refer any matter affecting a particular faculty to a subcommittee consisting of the representatives of that Faculty—that is to say, in the case of medicine to three persons, who cannot, of course, be cognizant of all the aspects of all questions affecting the Faculty of Medicine. Moreover, the medical members form a small minority on the Academic Council, a body largely concerned with routine business.

Among the causes which have retarded the development of the University on its medical side has been the fact that the Medical Faculty is itself too large and unwieldy a body to utilize the only weapon put into its hands—the power to consider reports of Boards of Studies and offer advice to the Senate upon them. On the other hand, the Academic Council is too small, and the representation of each faculty upon it is neither adequate nor representative of the varied interests involved; moreover, it is overburdened with detail, and consequently has neither time nor energy for its proper charge, which is the consideration of questions affecting the whole University and all the Faculties. The Cowper Commission suggested the formation of Faculty Boards consisting of persons elected by the faculty in sufficient number to include representatives of the various branches of medical study. Under the present constitution it is not possible to appoint an official Faculty Board with executive functions, and the need for such an executive committee will no doubt be impressed upon the Royal Commission; nevertheless it will be possible for the Medical Faculty by general consent at once to delegate its advisory functions to such a committee, which might be called a Faculty Board, and the Senate might be requested to regard this Faculty Board as the delegate of the Faculty itself, and therefore as the chief advisory body in medicine. The experience gained by the working of such an advisory committee would be a valuable guide to the Royal Commission in finally deciding the scope of the powers and duties of a statutory Faculty Board.

In order to obtain representation of all the different subjects of the medical curriculum it would be necessary to have a rather large Faculty Board; the memorandum suggests 24 to 30, about one-third representing the preliminary and intermediate medical subjects, and about two-thirds the final studies. It may be argued that the appointment of the Royal Commission renders the proposed action at the present time unnecessary, but the answer to this is that the Royal Commission cannot be expected to report for some considerable time, and that after it has reported there must be a further delay before its recommendations can be carried out. Meanwhile, the paralysis of the University on the medical side will continue, and as this paralysis appears to be in part, at least, due to an easily removable cause, there seems no ground for refusing this palliative treatment while awaiting the more drastic surgical measures which the Commission may be expected to apply.

THE MILITARY MEDICAL SERVICES.

MR. HALDANE, in his memorandum relating to the army estimates for 1909–10, has introduced a paragraph discussing the loss of the British army in the United Kingdom, India, and the Colonies, by death and invaliding. He has dealt with the matter fully this year because he considers that we are sufficiently removed from the disturbing influence upon normal statistics of the South African war to contrast the wastage from deaths and invaliding at the present day with that of the period preceding the war. In the memorandum the statistics for 1898 are contrasted with those for 1907, the last year for which returns are at present available, but we have thought it well to set out the figures year by year (see page 635). They show a remarkable diminution in the loss by disease, both loss of life and loss of service. The fall in rates of admission to hospital of constantly non-effective from sickness is partly to be attributed to an administrative improvement by which men with slight ailments are treated in barracks as out-patients. The true effect of the efforts at disease prevention which were redoubled and systematized as the result of the reforms in the Royal Army Medical Corps instituted in 1902 are best seen in the death and invaliding rates. The most conspicuous effect on the death-rate is to be observed in the Indian returns; in 1888 the ratio of deaths per 1,000 of strength in India was 15.20; in 1898 it was 20.31; a steady fall has been maintained since 1903, and the rate in 1907 was 8.38. The ratio discharged as invalids has followed a very similar course: in 1888 it was 12.43; in 1898 it was 19.94; and in 1907 it was 8.84. The decline in the death-rate among British troops serving in the colonies, including the force in Egypt, has also been conspicuous; it was 8.46 in 1888, and 5.16 in 1907. In the United Kingdom there has also been a decline both in deaths and invaliding, but the death-rate in earlier years was much lower in this country than in the colonies, and the scope for improvement therefore narrower. As Mr. Haldane points out, the improvement is not only welcome as indicating the increased wellbeing of the soldier, but as implying an all-round saving in the cost of the

army, since it means a reduction in the number of hospital beds, fewer men maintained in peace to produce the given number fit for war, and smaller annual drafts to be sent abroad.

The improvement is, we believe, to be attributed to a new spirit in the army, a recognition of the essential part which an efficient medical service can play in obtaining an efficient army, and in maintaining its efficiency both in peace and in war. We have said advisedly that a new spirit exists in the army, for we believe that the new conception has been accepted by officers of all branches who take a serious professional view of their calling. The fundamental principle is that the medical corps of an army is concerned with the maintenance of its fighting strength. The medical corps has, therefore, three classes of duties—therapeutic, military, and sanitary—using these terms each in its widest sense. The military medical officer of to-day after joining receives a very thorough training in his special duties, and the whole trend of this training is to impress upon him that his corps is an integral part of a great organization, all the branches of which are working towards a common end, which is to put and keep an efficient army on foot. He learns that in war his corps is responsible for the administration of the large army of non-effectives who are produced—and, it may be added, produced with such startling rapidity—in all campaigns; that his corps is responsible for the treatment of injury or illness which has rendered a man non-effective, for his removal from the fighting lines, his transmission along the line of communications to the base, and his final disposal either by return to duty or by return home as an invalid. The corps, therefore, is responsible for the details of the treatment, removal, clothing, and feeding of the non-effective; and the re-arming and reclothing of the man who recovers his health and can return to the ranks. Further, in peace he learns that it is through his corps that the soldier is enlisted, and through it in many instances discharged; that the selection of soldiers is a grave responsibility, and that the diminution of wastage by the prevention of unnecessary invaliding is a most important element in the economy and efficiency of an army. Both in peace and in war he is taught to realize that upon his knowledge, efficiency, and zeal must depend to a very large degree the extent to which the prevention of disease, and especially of such diseases as typhoid fever, which has always been the scourge of armies in the past, can be carried out. The success in the prevention of disease in an army is not a matter entirely in his hands; without the hearty and intelligent co-operation of military officers in all branches and grades complete success is not possible, but we believe that we have been justified in the statement that there is a new spirit in the army generally, and that it has resulted in an approximation of medical to general army administration. The relation of medical to general army work is studied by modern staff officers, and the co-ordination of combatant and medical duties is making satisfactory progress.

Mr. Haldane has told the country that what it wants is a small and efficient army, organized and administered on scientific methods, and ready for service abroad, and he, at least, clearly recognizes that scientific efficiency is impossible unless the multifarious duties which fall to the lot of the medical corps are adequately discharged, and that they cannot be adequately discharged unless the staff of medical officers is maintained at sufficient strength, and unless these officers are encouraged, and required, to cultivate the special knowledge and experience which is necessary for the due discharge of their special duties.

If and when this country is involved in war the regular army will have to take the field, its place must be supplied by the Territorial Force; in that force the place of the Territorial Medical Corps will be not less important than in the regular army; in fact, it will be almost precisely the same. It will have the same administrative and scientific duties, the same obligation to protect the soldier from disease, and the same responsibility for his safe transfer when sick or wounded from the fighting line to the general hospital.

DEATH CERTIFICATION.

EVERY year brings fresh evidence of the necessity of legislation in connexion with the registration of deaths and the law relating to burials. We are, therefore, glad to see that Mr. George Greenwood has again introduced his Deaths Registration and Burials Bill. Last year it had no chance of passing into law, much as it is needed, but we hope that this year better fortune may attend it. The bill proposes to give effect to the recommendations of Sir Walter Foster's Committee of 1893. Under it no death could be registered without a certificate of death signed by a registered medical practitioner or the public certifier of deaths appointed under the Act, or a proper verification certificate of death signed by the public certifier of deaths. The bill provides also for the appointment of a public certifier of deaths in every Poor Law union, who must be a registered practitioner, and who would be responsible for the verification of the fact of death in all cases. The bill would also make it impossible for any body to be buried without a certificate from the registrar of deaths or from a coroner sent directly to the burial authority, which would have to be returned to the registrar endorsed after the burial. The bill also provides for the registration of stillbirths and the form of death certificate, and legalizes penalties for non-compliance with the provisions of the measure. In some quarters it may be held that this subject is under the consideration of the Departmental Committee now considering amendments on the law relating to coroners. Even if this be so, Mr. Greenwood's bill suggests to that Committee the directions in which the law can best be amended; and while the Government will no doubt await the report of their Committee before taking action, we would urge, in the interests of the public, that any great delay is unjustifiable. Legislation has been overdue for years, and the manner in which this subject has been neglected by successive Governments for more than fifteen years after an authoritative report on the evils of the present system, has become a scandal. Under the existing law crime often escapes detection. More than once this has been painfully illustrated in criminal trials. Even now over 8,000 deaths are uncertified every year, and the slow rate of improvement is illustrated by the figures for the last ten years for England and Wales. The uncertified deaths for 1897 were 11,103; for 1898, 10,441; for 1899, 10,745; for 1900, 11,257, and for 1901, 9,936. In answer to a question put in the House of Commons on Monday last by Mr. George Greenwood, the President of the Local Government Board has

brought these figures up to date in the following table:

Year.	Total Number of Deaths.	Number of Uncertified Deaths.	Proportion per 100 of Uncertified Deaths.
1902	535,538	9,654	1.80
1903	514,628	8,721	1.69
1904	549,784	8,882	1.62
1905	520,031	8,446	1.62
1906	531,281	8,114	1.53

These figures show, it is true, a slow improvement. In the first five years there were 53,532 uncertified deaths as compared with a total of 43,817 in the second quinquennial period. This is good so far as it goes, and has been produced by complaints made from time to time by the General Medical Council and by the British Medical Association. The Registrar-General has been braced up to stricter administration of a defective law. But the evil can never be adequately dealt with until a new and more strict Act has been placed on the Statute Book. Under the present, crime can escape detection, deaths are registered and bodies are buried under conditions that do not secure safety for the public or accuracy for statistical records. It is time that a loose and imperfect system was mended, and we urge upon the Government the necessity of dealing with the subject speedily and drastically.

THE WANING OF CONSCIOUSNESS UNDER CHLOROFORM.

DR. ELMER E. JONES, of Indiana University, has contributed an interesting paper to the *Psychological Review* on the waning of consciousness under chloroform. He gives the results of three introspective studies on himself during the administration of the anaesthetic. At the first inhalation, he says, there are marked sensations in the region of the heart, the contractions of which become violent and accelerated. Immediately accompanying these sensations a peculiar stupefying feeling pervades the whole body. In regard to the order in which the various types of consciousness disappear there are, he believes, two sharply defined stages: first, the complete damping down of all the sense organs, so that there is no communication with the outside world; secondly, the disappearance of memory, all types of imagery, associational processes, reason, and isolated ideas. In the very earliest stages of anaesthesia the visual sense was slightly stimulated, the colours in the spectrum appearing a little brighter, letters and figures somewhat clearer and the light in the operating room a little more intense. Hearing for the first few minutes was almost normal, save for a slight roaring which for a considerable time did not appear to interfere seriously with perfect audition. At this early stage various movements were made to test the kinesthetic sensations. For the most part these sensations appeared normal, though to innervate seemed difficult, and to initiate a movement seemed slightly fatiguing. There also appeared in the movements themselves two illusions: all movements made appeared to be much longer and much slower than they actually were. The tactile sense in the early stages seemed slightly dulled to the touch of the pointed instrument, yet it could be accurately localized. At the close of the first two minutes there was a general bodily stupor, accompanied by decidedly pleasant feelings throughout. Dr. Elmer Jones says that, in the three tests made by him, the first sense to break down under the influence of chloroform was hearing; while vision was still perfectly clear, and the tactile sense only slightly blunted, audition had begun rapidly to wane. All the deeper conscious states were perfectly normal at that time. Memory was not impaired, the imagination was very active, and figures were added up with as much ease as under normal conditions. With the disappearance of the tactile sense and hearing the body had completely lost its orientation. It appears to be simply floating in space. Dr. Elmer Jones describes this as a most ecstatic feeling. His feelings corresponded very closely to Cardinal Newman's description of death in the *Dream of Gerontius*, when he says:

> Down, down, forever I was falling, through
> The solid framework of created things.

Closely following the disappearance of the tactile sense all muscular control was lost. But, after all movements had ceased, it was still possible to send the impulse to the proper muscles from the motor centres in the brain; at least, there was a distinct feeling of the impulse so moving. The last movements to disappear were the most highly specialized; the fingers could be moved for a considerable time after the biceps and triceps refused to contract; the organs of speech could be innervated to movement a considerable time after most other muscles refused to act, but, of course, speech was defective. The movements of the tongue and eyes were the very last to disappear. At this stage of the anaesthesia the sense element in consciousness had practically been eliminated, but there still remained an inner consciousness which for the most part was perfectly normal. At this point there appeared a pretty general disintegration of ideas, and all associations seemed considerably broken. Ideas disappeared very rapidly, leaving an entire blank. These lingering ideas were some of the very earliest gained in life. They were so vague and indistinct that they could scarcely be recognized, yet the fact that they remained so long as the residual of weakened cerebral activity shows how deep-seated they are in the mental constitution. Dr. Elmer Jones thinks his observations throw light on the psychology of death. But, after all, experiences under anaesthesia are such stuff as dreams are made of. From the sublime thoughts that came to him while under the influence of chloroform Oliver Wendell Holmes thought he would be able to solve the riddle of the universe. Placing himself in his arm-chair, with pen, ink, and paper at hand, he inhaled the anaesthetic. As drowsiness stole over him, the nature of things seemed revealed to him. By a vigorous effort he seized his pen and wrote, he knew not what, for before he had finished he fell back unconscious. When he awoke, with trembling anxiety he turned to the sheet of paper, on which he could read in scrawling characters, but quite legible, the secret he wished to know disclosed in the following oracular words, "A strong smell of turpentine pervades "the whole!"

THE LIGHTING OF SCHOOL ROOMS.

THIS important question has been studied in America and Continental countries perhaps more carefully than in England. The city of Boston in 1907 appointed an expert committee consisting of three ophthalmic surgeons and two electricians to carry out experiments to determine the best method of lighting school rooms, and the chairman, Mr. Miles Standish, has published an account of its work and conclusions in *Ophthalmology*. It is not difficult to arrange the light for a single desk; it should be sufficient in strength, it should come from the left side, it should not be reflected from the paper into the eyes of the student

and, though the light upon the book should dominate, the general illumination of the room should be nearly as great as that upon the paper to avoid too great a contrast. In the school room the problem is more complicated, for from forty to sixty desks have to be illuminated. The first requisite is good general illumination, and this must depend upon the style of decorating and furnishing adopted. The best colour for the walls is a pale yellow-green, or buff, the latter being perhaps more suitable for both day and night work. The "window shades," which are, we fancy, what we should call "blinds," should be "hand-painted" grey-green, which is the best colour to exclude the direct sun by day and reflect the illuminant at night. The desks should be of light-coloured wood, but the surface should not be polished. In Germany an attempt has been made to secure a general diffuse illumination at night by throwing a powerful light upon a white ceiling and upon the upper third of the walls. This method demands a brilliant and therefore expensive light, and the absence of shadows has a bad physiological effect. The experiements were made in a room 28 by 28 ft., the walls were painted light yellow, the ceiling white. It was found that it was necessary to have at least nine stations; it was difficult to avoid concentrating the light upon the desks in proximity to these stations, and to eliminate conflicting shadows. A shade called the "Zalinsky," constructed of prismatic glass, coated on the inner or outer surface with white enamel, was found to be the best. Sufficient light penetrated it to properly illuminate the ceiling and walls, but the greater portion was projected downwards at a wide angle. Within these reflectors were placed incandescent bulbs, the lower third or less of the bulb being frosted to hide the filament. When the light stations were properly arranged, it was found that at no desk did the shadow of the pen fall upon the paper, nor did a head ever cause a shadow to obscure the work. With the correct lamp, the candle-power on top of the desk was 2.5. The 40 watt 36 candle-power tungsten lamp was the most efficient as regards illuminating power, and showed a net economy of 45 per cent. when compared with a carbon lamp. Attention is drawn to a report by Mr. Bishop Harman to the Educational Committee of the London County Council in 1907, giving an account of how best to illuminate a school by gas. Harman concluded that the shade of a mantle burner must have a spread of 90°; but with an alternating current allowing of a simple static transformer, and the use of high-efficiency metallic filament lamps, the cost of electric lighting should not be much more than that of gas.

THE FOSSIL MAN OF LA CHAPELLE AUX SAINTS.

PROFESSOR MARCELLIN BOULE, palaeontologist to the natural history museum, recently communicated to the French Academy of Sciences a note on the remarkable human remains found in a grotto near to La Chapelle aux Saints by three French abbés, MM. J. Bouyssonie, A. Bouyssonie, and L. Bardon. Professor Boule vouches for the archaeological competence of these gentlemen, and says that there can be no doubt that these bones were found in geological strata corresponding to the middle pleistocene period, and that their antiquity is attested also by their fossilized condition as well as by their morphological characters. The bones comprise a skull broken into numerous fragments, some vertebrae, and certain bones of the limbs. The last indicate an individual of the male sex whose height scarcely reached 1 m. 60 (5 ft. 4 in.). The skull has been satisfactorily reconstructed and shows striking simian characteristics; it is dolichocephalic, the cephalic index is 75; the bones are very thick, the cranial cavity flattened, the frontal bone retreating, and there is an enormous development of the superciliary ridges, which are as prominent as those in the famous Neanderthal skull, and are surmounted by a deep furrow, which extends from one orbital process to the other; the occipital portion of the skull is prominent but much depressed; the occipital foramen is placed far back, and the occipital condyles are flattened, while the mastoid processes are not well marked. The face shows considerable prognathism, the orbits are projecting and large, and the nose, which is separated from the forehead by a deep depression, is short and very broad. The superior maxilla, instead of being hollowed out below the orbits to form the canine fossa, as is the case in all existing human races, protrudes forward, to form, with the prolongation of the malar bones, a sort of snout. The teeth have disappeared, but the palatine vault is very long, and the lateral borders of the alveolar arcade are nearly parallel, as is seen in the anthropoid apes. The lower jaw is remarkable for the great width of the condyle, the slight depth of the sigmoid notch, the great thickness of the body, the obliquity of the symphysis, and the absence of chin. This skull presents all the characters of the crania found at Neanderthal and Spy, and as specimens of this type have now been found at places far removed from one another, it can no longer be contended that they represent merely a pathological condition, as was at one time thought by men of such eminence as Virchow, Carl Vogt, and Quatrefages; they must represent the type of a race of men inhabiting a portion of Europe in the middle pleistocene period. The type differs from any of the races actually in existence, and is much inferior to them. There is no question of any generic difference, but whether a specific distinction should be recognized must depend on what is meant by "species." If the cranium belonged to a monkey, a carnivore, or a ruminant, the characters are so marked that they would justify its classification as a separate species. Professor Boule thinks that such skulls occupy a position midway between the *Pithecanthropos* of Java and the lowest living human races, although he does not imply by this that there is any direct genetic connexion.

THE INTERNATIONAL OPIUM COMMISSION.

THE International Opium Commission which has been sitting in Shanghai has ended its labours and has drawn up a series of resolutions, the substance of which has been telegraphed by the correspondents of the *Times* and of Reuter's Agency. The first resolution recognizes the unswerving sincerity of the Chinese Government in its efforts to suppress the use of opium, the increasing body of public opinion among the Chinese by which these efforts are supported, and the real, though unequal, progress made in a task of the greatest magnitude. The second recognizes that the unrestricted manufacture and sale of morphine is a grave danger, and that the morphine habit shows signs of spreading, and therefore the Commission urges strongly upon all Governments the importance of taking drastic measures to control the manufacture and sale of this and other derivatives of opium. The third resolution, recognizing the importance of the scientific investigation of anti-opium remedies, and of the properties and effects of opium, recommends each Government to take such action in this branch of the subject as it may deem necessary. These three resolutions were submitted by the British delegates. Two other resolutions were

adopted on the recommendation of the American delegates; one of these had reference to the institution of reasonable measures at ports of departure to prevent the shipment of opium or its alkaloids, derivatives, or preparations to any country which prohibits their entry, and the other recommended each Government to apply its pharmacy laws to its subjects in the consular districts and settlements in China. Two other resolutions were submitted by the British and American delegates jointly; one, in view of the action taken by the Chinese and other Governments to suppress opium-smoking, recommended that each delegation should move its own Government to take measures for the gradual suppression of opium-smoking in its own territories, with due regard to the varying circumstances. The other, after stating that the use of opium in any form otherwise than for medical purposes is a matter for prohibition or regulation in nearly every country, and after referring to the fact that there are wide variations in the conditions prevailing in different countries, urges upon each of the different Governments concerned the desirability of a revision of its regulations. The two remaining resolutions, proposed by the Chinese and emended by the French delegates, urge upon all Governments having concessions or settlements in China the suppression of opium divans, and recommend the respective Governments to enter into negotiations with the Chinese Government to ensure the prompt adoption of effective measures in foreign concessions or settlements in China to prohibit the trade in anti-opium medicines containing opium or its derivatives.

MEDICAL MEN AND LEGACIES FROM PATIENTS.

A DOCTOR who benefits by the will of a patient who has been under his care is necessarily, however honourable his conduct may have been, placed in an awkward position. The charge of undue influence is easy to make, and it is one which disappointed relatives are usually eager to bring. It is one that from the very nature of the relations between practitioner and patient is difficult to rebut. It would save a good deal of litigation if the English law were assimilated in this particular to the French law, which treats all bequests to a doctor from a patient as null and void. But the law being what it is, there is no reason why a medical man should not be allowed to benefit by it, and it is the duty of those who administer the law to protect him against injurious imputations. These reflections are prompted by a case which was recently tried before Mr. Justice Bigham. Dr. William Dunn, now medical officer to Uppingham School, but formerly in practice in Battersea, had among his patients there a lady who, when she first came under his care, was living apart from her family in very poor circumstances. Besides advising her as to her health Dr. Dunn lent her money, and Mrs. Dunn tried to make peace between her and those from whom she was estranged. Later the lady inherited a considerable sum of money from a sister, and then she seems to have begun making a number of different wills, sometimes independently, sometimes with the help of various solicitors. The terms of these wills varied, but one feature stood out clearly in them all—the wish to benefit Dr. Dunn, who had befriended her in her evil days. There is no doubt, from the evidence given at the trial, that she was given to drink, but there was no proof that any undue influence was exercised either by Dr. Dunn or his wife in the matter of her testamentary dispositions. It is an important point in the case that Dr. Dunn ceased to have charge of her a considerable time before her death, and did not see her after April, 1907. The will which was disputed was executed in September, 1906, and between that time and the date of her death, which occurred in June, 1907, she was under other medical care, and had independent legal advice. She had thus plenty of opportunity of changing the terms of her will if she had wished to do so. The trial lasted three days, when the parties came to terms, and the will of September, 1906, was pronounced for. The terms provided for the division of the lady's estate, which amounted to about £10,000. We congratulate all the parties on the settlement of a painful case, and we especially congratulate Dr. Dunn on the virtual acquittal from an odious charge which the settlement involves. We have purposely refrained from going into details of the case as reported in the *Times*. We may be allowed to say, however, that in our opinion Dr. Dunn is perfectly entitled to a legacy which was obviously intended by the poor lady to be a reward for professional and other services rendered by him to her at a time when she was poor and friendless.

THE PREVENTION OF FIRE.

THE great majority of the public is probably quite unaware of the existence of the British Fire Prevention Committee, but for a number of years it has been carrying on work of the utmost public utility. The object of the committee, which consists of experts, is the scientific investigation of the cause, prevention, and control of accidental outbreaks of fire. The committee's method is experimental, and for the furtherance of its ends it has established a testing station in Regent's Park. Here almost any kind of fire can be made under what may be called laboratory conditions, and various methods of extinguishing are regularly tested under the eyes of competent judges. An important part of the committee's work has been the periodic publication of reports in pamphlet form under the title of "Red Books." Two of the most recent of these are, perhaps, of exceptional interest to the public at large. No. 128 describes a series of tests undertaken to estimate the value of such ordinary apparatus as a hand-pump, buckets, jugs, pitchers, and even the humble tumbler, as applied to the kind of outbreak of fire that is usually met with in an ordinary dwelling-house. In each of these experiments the fabric tested was allowed to get "well alight," but was quickly extinguished by the simple means described. It appears, however, that it took generally less than two minutes for the materials used in the experiment to justify the application of the test, so that one is justified in assuming that even five minutes' start in an ordinary bedroom might render such a fire superior of ordinary domestic resources. The important point emerges, however, that the successful extinction of such a blaze depends not only on the quantity of water used, but on the force with which it is pumped or thrown on to the burning material. Pamphlet No. 138 is concerned with the extinction of burning petrol and other volatile and highly inflammable liquids and of celluloid by means of asbestos cloths, sand, and steam. It appears that the value of steam is proportioned to the degree of saturation which can be obtained in the room containing the burning material, and steam under pressure is not of course commonly available. But the extinguishing powers of suitable asbestos cloths are shown to be so remarkable, that it seems as though the provision of one or more such cloths should be made compulsory in garages, dye works, and other places where petrol or other such inflammable substances are stored.

These publications are admirable in their scientific accuracy, and deserve a wider recognition by the large public whom they immediately concern. They can be obtained from the office of the Committee, Waterloo Place, Pall Mall.

WE regret to learn that Mr. Wakley, Editor of the *Lancet*, has been seriously indisposed for the last two months, and that his condition at the present time causes his friends much anxiety.

AMONG the fifteen candidates selected by the Council for election into the Royal Society this year are Sir Thomas Barlow, Bart., K.C.V.O., M.D., Holme Professor of Clinical Medicine in University College Hospital Medical School; Dr. James Lorrain Smith, Professor of Pathology in the Victoria University, Manchester; and Dr. James Thomas Wilson, Professor of Anatomy in the University of Sydney, New South Wales.

AT a meeting of the business committee and the German members of the International Cancer Research Association, held at Berlin on January 4th, it was agreed, on the proposal of His Excellency Professor von Czerny to convene a conference on cancer at Brussels during the exhibition in that city. The final decision was left to the board of directors, which will meet during the session of the German Surgical Congress at Berlin, April 14th to 18th.

WHEN the late Dr. Thomas Peacock died in 1882 the large collection of abnormal hearts he had collected, which form the basis of his treatise on *Malformation of the Heart*, was presented to the Museum of the Royal College of Surgeons. These with the others added before and afterwards make the College collection one of the most extensive in the world. This collection will form the subject matter of three Hunterian Lectures to be given by Professor Arthur Keith, Conservator of the museum, in the theatre of the Royal College of Surgeons, on March 8th, 10th, and 12th, at 5 p.m.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

The Debate on the Address was concluded on Thursday in last week as anticipated. After the Irish amendment had been defeated there was an animated discussion on the imprisonment of British subjects in India, and a division in which the Government had a majority of 119. On Thursday the local taxation question was raised, and many references were made in the course of the debate to the increased expenditure caused by medical inspection of school children. General sympathy was expressed on both sides of the House with the view that local burdens required to be lessened. After a division a further amendment relating to the Congo came on and was withdrawn, and the debate finished with the alien question, which was made the occasion for a strong denunciation of Mr. Gladstone's administration of the Act. He, however, made a very vigorous defence of his action, and had the best of the argument, and after a division the Address was agreed to, and the Commons freed for general business.

The Supplementary Estimates occupied the Commons on the first three days of the week, and the time was mainly occupied with inquiries about the £910,000 required above the estimate for Old Age Pensions. The enormous preponderance of persons over 70 in Ireland as compared with Great Britain was the subject of much comment, and the Chancellor of the Exchequer said that an inquiry was being made into the matter. Many references were also made to the interpretation of medical relief. The vote was eventually agreed to, and a discussion on the estimate for the unemployed followed. The Supplementary Estimates were not disposed of till Wednesday, and consequently the second reading of the Housing and Town Planning Bill could not be taken.

The London University Commission.—Mr. Ramsay Macdonald asked the President of the Board of Education whether, before nominating a commission to inquire into the London University, he had consulted representatives of London technical schools and polytechnics; and, if so, with what results? Mr. Runciman replied in the negative, and said that it was not considered necessary before nominating the commission to consult representatives of London technical schools and polytechnics on the personnel of the commission or on its reference. Mr. Macdonald then asked if it was not one of the chief purposes of this commission to determine the future status of the Imperial School of Technology? Mr. Runciman said that was distinctly within the terms of reference, and, in reply to a further inquiry as to whether the teachers had not asked to be represented on this commission, he stated that the decision arrived at was that they should avoid appointing a representative commission, but that it would be better to have a judicial commission. If a representative commission had been appointed, it would have been very large and unwieldy; and they had done their best to select a judicial commission.

The Cost of Medical Inspection.—Mr. Ramsay Macdonald asked the President of the Board of Education whether his attention had been drawn to the dissatisfaction of local education authorities regarding the burden which adequate medical inspection of school children would put upon rates, and the failure of the Board of Education hitherto to give what the local authorities considered to be fair financial assistance for this purpose; and whether he could now say what the Board of Education proposed to do, or when he intended to make a statement on the subject. Mr. Runciman replied in the affirmative, and said that many requests were constantly being made for increased grants in relief of local rates. Had either of the Education Bills of last session passed into law, increased grants for educational purposes would have been made to local authorities. He was not in a position to make any statement at present, but the Prime Minister and the Chancellor of the Exchequer had undertaken to receive a deputation on this subject on March 20th.

Pulmonary Tuberculosis.—Mr. Summerbell asked the Secretary of State for War if he was aware that the Local Government Board had issued a general order to local authorities in England and Wales setting out that, whereas tuberculosis was an endemic disease, and that form of the disease which was known as pulmonary tuberculosis was an infectious disease, new regulations were expedient with a view to preventing the spread of that disease; and, if so, could he state whether it was the intention of his department to act on such order in so far as the army was concerned, in view of the fact that some 350 men were discharged from the army each year suffering from this disease, and without receiving any consideration from the War Office, and by so doing give effect to the recommendations made some time ago on this subject by a Select Committee appointed for the purpose. Mr. Haldane replied that if his hon. friend would kindly refer to the order in question (No. 52,712) he would see that the new regulations amounted to instructions in regard to notifications to the medical officers of health of sanitary authorities of cases of pulmonary tuberculosis occurring among inmates of Poor Law institutions and poor persons in receipt of relief from the poor rate. Cases occurring among men discharged from the army had been similarly notified in the past to these officers.

Tuberculosis and Insanitary Schools in Ireland.—Mr. John Murphy asked Mr. Birrell last week how many schools there were consisting of only one apartment in which cookery and laundry work were taught; whether he was aware that there were many insanitary and overcrowded schools, and that a portion of the tuberculosis prevalent in Ireland was directly traceable to the defective atmosphere caused by rebreathed air in such schools. Mr. Birrell

answered that the Commissioners of National Education informed him that the preparation of a return of schools having only one apartment in which cookery and laundry work were taught would take a considerable time. The value of the return would not be commensurate with the labour involved in compiling it. There were many insanitary and overcrowded schools, but the Commissioners had no definite information as to the connexion between such schools and the prevalence of tuberculosis. The Commissioners regarded instruction in cookery and laundry work as a most important part of the ordinary curriculum of national schools, but teachers were not required to teach these subjects when suitable provision for the purpose could not be secured.

Indian Medical Services.—On Tuesday, in reply to Dr. Rutherford, Mr. Buchanan stated that there was no fusion of the two medical services in India in time of war; the services worked separately—the Royal Army Medical Corps with British field hospitals and the Indian Medical Service with native field hospitals. Suggestions for amalgamation had on several occasions received consideration, but they had not been thought likely to lead to reduction of establishment or expenditure, or, if they did, they might involve a risk of a breakdown of the medical organization in time of war.

Experiments on Cats.—Sir Frederick Banbury asked the Home Secretary last week whether a number of painful experiments had been and were being carried on on cats for the purpose of obtaining evidence to lay before the Departmental Committee on Lead Poisoning; and, if so, whether he would state under what certificates they had been performed. Mr. Gladstone replied that two licensees obtained certificates A and E last month to carry out experiments for this Committee. One of these gentlemen, who gave evidence before the Committee in December, had held other certificates (A and E) since 1905, authorizing experiments on cats in connexion with lead poisoning. The objects of the experiments included an inquiry into the channels of infection in chronic lead poisoning and the establishment of better methods of diagnosis—objects which he thought the House would agree to be of great importance. In answer to a further question on Monday as to the treatment and disposal of the cats Mr. Gladstone said that the accounts which he had seen showed that the cats used in the experiments which were brought to the notice of the Committee, but which were not specially performed for them, were killed, some at once, and others after the lapse of a few days. He was not aware that any of the series of experiments authorized on behalf of the Committee had yet been performed, but he was making inquiries.

Vaccination.—Mr. Lupton asked the President of the Local Government Board if he was aware that Albert Shaw, of 114, Sutherland Road, Longton, about 4 months old, was vaccinated about September 15th, 1908, by Dr. Allan; that the child became so ill that after three days Dr. Lefevre had to be called in; and that the child, after great suffering, died on September 26th; if this child was vaccinated with stuff supplied by the Local Government Board; and, if so, what steps he proposed to take to stop the distribution of poisonous vaccination matter. Mr. John Burns said that he had communicated with Dr. Allan, and was informed by him that a child named Albert Edward Shaw, of 114, Sutherland Road, Longton, died on September 26th last, the cause of death being stated in the death certificate as enteritis. Dr. Allan also informed him that he had vaccinated with calf lymph supplied by the Local Government Board a child whose name was entered on the birth register as Morris Shaw, but who seemed to be the child already referred to. The vaccination, however, took place on June 24th last, and not about September 15th as stated in the question. There did not appear to be any reason to connect the death from diarrhoea with the vaccination, which took place more than thirteen weeks previously.

The Story of a Tramp.—Mr. Cooper called the attention of the President of the Local Government Board and of the Home Secretary to the death of a tramp who died in prison from heart failure following pneumonia, and asked if they were aware that Andrewes had been an inmate of the Croydon casual ward, and when his time expired said he was too ill to continue his journey; whether the officials of the Croydon Union refused to listen to his complaint; whether he was seen or examined by any medical officer of the Croydon Union; was he aware that Andrewes, after being turned out of the casual ward, broke a window so that he might get locked up to get proper medical treatment, and was sentenced by the Croydon magistrates to seven days' hard labour; whether the Croydon Board of Guardians had made any inquiry into Andrewes's statement; and, if not, what did he intend to do in the matter? Mr. Burns replied that he had seen a copy of the depositions taken at the inquest, and he had made inquiry with regard to the case. It appeared that on the day on which Andrewes's time was up for leaving the Croydon casual ward, he said that he did not feel well, and that he could not go on his journey. He was consequently examined by the workhouse medical officer, who did not find anything wrong, and thought he was fit to continue his journey. The medical officer told him he did not consider the case one for infirmary treatment, but if he wished to become an inmate he should apply to the relieving officer for an order of admission. It was the fact that almost immediately afterwards he broke a window in the workhouse, and was sentenced to seven days' hard labour for wilful damage. The medical officer stated that he attended the police-court and gave evidence as to the physical condition of the man, who made no complaint then of being ill, and did not appear to be so. The matter had been fully inquired into by a subcommittee of the Visiting Committee of the workhouse specially appointed for the purpose, and the statement of the medical officer appeared to be supported by the other statements made to them. Mr. Gladstone, in answer to a similar question, said that he had made inquiry into this case, and was informed that Andrewes, having complained when in the casual ward at Croydon that he felt unwell, was examined by the medical officer of the Croydon workhouse, who pronounced him to be fit to leave, and referred him to the relieving officer for an order if he wished to enter the workhouse. Upon this Andrewes broke one of the windows, and was therefore charged by the workhouse authorities. He gave no reason for breaking the window, and did not complain of illness either to the police or to the magistrates. Consequently there was no reason for the police to obtain medical advice. On admission to prison he was found to be so ill-nourished that the assistant medical officer put him in the infirmary instead of on ordinary cell, but no actual illness could be observed until a day later.

Destruction of Vermin.—Mr. Cowan asked the President of the Local Government Board if he had received representations from the Scientific Committee of the Incorporated Society for the Destruction of Vermin and from other sources, urging immediate investigation as to whether the various bacteriological preparations now on the market for the destruction of rats were, or were likely to become, pathogenic to man; and what action the Board proposed to take in the matter. Mr. Burns replied that he did not find that the committee of this society had made any such representations as were above referred to, but his attention had been drawn to the question whether some action should be taken with regard to various bacteriological preparations for the destruction of rats, with a view to preventing danger to man, and the subject was now receiving consideration.

The Deaths Registration and Burials Bill, to amend the law relating to the registration of deaths and to burials, was presented and read a first time on Monday last. The bill is in charge of Mr. George Greenwood, and is backed by Sir Walter Foster, Mr. John Robertson, Mr. Smeaton, Dr. Rutherford, Mr. Hart-Davies, Dr. Shipman, and Mr. Atherley-Jones. It is down for second reading on March 9th.

Private Members' Bills are set down for Friday in each week, and the debate on the Address being finished, Mr. Pirrie was able to bring on his Scottish Temperance Bill last Friday. It is a moderate measure, and although vigorously criticized, passed its second reading by a large majority.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

BIRMINGHAM.

EPIDEMIC OF MEASLES.

THERE has been for some weeks past an epidemic of measles among the infants in the Birmingham schools. An inspection of the elementary schools shows that the number of children in the upper departments who are away through measles is small, but in the infant departments the number is very large, so that the Education Committee has found it desirable to close twelve of the schools. The deaths from measles during last week numbered 31, and in the previous week 25. The increased mortality from measles raised the total death-rate of the city to 20 8 per 1,000, as compared with an average rate of 15.9 for 1908.

RESULTS OF MEDICAL INSPECTION.

Dr. G. A. Auden, medical superintendent of the inspection of school children, has issued a report concerning the examinations made between September 1st and December 31st, 1908. The report covers only a portion of the school area. He explains that the prime object with regard to the statistical aspect of the work is to obtain data for the estimation of the present physique of the nation, which is a more complex problem than is apparent at first sight. During the four months covered by the report 10,000 children were examined, equivalent to a rate of about 30,000 a year. The Board of Education estimated that the inspection of the 96,000 children in Birmingham would take three years. A large number of the parents attended the inspections showing that they took a lively interest in the welfare of their children. Dr. Auden states that the nutrition of the Birmingham children compared very favourably with that of children in other parts. Out of the 10,000 children examined, 2,271 were found to have defects of one kind or another; 1,033 had affection of the eyes, and it was suggested that defective eyesight was largely manufactured in the infants' schools by allowing the children to place their books too near their eyes, the focal length of which being still variable became too short in consequence. The officers of the Dental Hospital have examined the teeth of 2,053 children, and report that only 4 per cent. were found to be dentally perfect.

The number of children already reported as suffering in some stage of pulmonary tuberculosis was 31, and in addition there were 39 in whom the symptoms were doubtful.

NEW MEDICAL MAGISTRATES.

Dr. Robert Simon, honorary physician to the General Hospital and consulting physician at the General Dispensary, and Mr. Gilbert Barling, honorary surgeon to the General Hospital and Dean of the Faculty of Medicine at Birmingham University, have been appointed by the Lord Chancellor to the Commission of the Peace for the City of Birmingham.

MANCHESTER AND DISTRICT.

MEDICAL INSPECTION AND TREATMENT OF SCHOOL CHILDREN.

Two points have come out very strongly in the recent discussions by the Manchester Divisions on the medical inspection and treatment of school children. In the first place, there is the determination loyally to support the decisions which the British Medical Association has already arrived at, first, in regard to the remuneration of whole-time and part-time medical inspectors, and secondly, in objecting to the subsidizing of hospitals for the sake of obtaining hospital treatment of children. In the second place, there is a practical unanimity in demanding that if there is to be any medical treatment at all at the expense of the rates, it must be strictly confined by something like a wage limit to those children whose parents are unable to pay ordinary fees; and further, that the surgeries of all practitioners who are willing to undertake the work should be recognized, vouchers being given to the children to be taken to any such surgery that the parents may choose, and each voucher being paid for by the education authorities on a fixed scale. No attempt has been made to suggest what the wage limit should be, but it is demanded that, whatever may be fixed, it should not be allowed to become a dead letter. There seems to be a tendency in some quarters, mostly official, to regard the voucher plan as impracticable. It is said that the authorities would not be able to exercise sufficient control over a large number of practitioners, each to a certain extent independent, and that there would be no guarantee that cases would not be kept on longer than necessary in order to obtain the certain fees. This all amounts to saying that medical men cannot be trusted to do justice to patients. It seems to be forgotten that Manchester already offers a good example of this very scheme. A fee is already paid by the Corporation to any general practitioner who answers the call of a midwife, what amounts to a voucher being given to the doctor, which is paid for by the authority according to a fixed scale. The same objections as stated above were made to this when it was first proposed, but the plan has succeeded so well in Manchester that probably in no town in the kingdom has the Midwives Act been so successful, for parturient women are practically certain of obtaining medical aid with the minimum of delay, while the cost to the Corporation in 1907 only amounted to £247 10s. in medical fees. As for the other suggestion, that some doctors might be tempted unduly to prolong their treatment for the sake of the fees, it is practically certain that, putting the matter on the lowest grounds, no man with a grain of common sense would risk his professional reputation by any such dishonesty. But there is this further safeguard, that it may be presumed that the children would all the time remain subject to the periodical inspection of the official medical inspectors, who would readily detect any case in which treatment was unnecessarily prolonged. In addition to this it is noteworthy that the Majority Report of the Royal Commission on the Poor Laws actually recommends this plan for general adoption in all cases of illness in patients unable to pay fees. It even suggests that district medical officers may gradually be done away with. There is nothing that will so gain the confidence of the people as the knowledge that they can choose any doctor they wish. With that knowledge they will willingly submit their children to treatment when advised by the medical inspectors, whereas they would often absolutely refuse if they were bound to go either to someone whom they did not know or did not trust. The further suggestion of the Majority Report, that people who are not paupers but who are unable to pay ordinary fees should be induced to join provident dispensaries, would only slightly affect the voucher scheme for school children much later, as it would be a gradual process. Meantime if there is to be any treatment at all of school children at the public cost, the Manchester Divisions are in favour of vouchers that may be taken to any practitioner.

A FAMINE IN DOCTORS.

The *Manchester Evening Chronicle* is responsible for the statement that "a mild famine in doctors is threatened in the United Kingdom, as the number of students registered in the universities is seriously on the decline." It is said that the number of students registered in the three kingdoms in the year 1891 was 2,405. The course of study was then lengthened from four to five years, with the effect that in the following year only 1,671 names were registered. After that the figures slightly increased for a year or two, but soon again decreased, until in 1900 there were only 1,538 registered, and in 1907 the low water mark was reached of only 1,346. The writer professes to find in these declining figures an explanation of the fact that public bodies frequently obtain only a meagre response to their advertisements for candidates for vacancies on their medical staffs. It is somewhat curious to find that he quotes the experience of the Chorlton guardians, who recently had only five applicants for the vacant resident medical officership. He might have added the experience of the Salford guardians, who had only one applicant for a similar post. He seems to be ignorant of the fact that there may be other reasons for the fewness of applicants for such posts. The fact is that in the

Manchester district resident medical officers under boards of guardians are so badly paid, so much overworked, and subjected to so much interference by individual guardians that the posts are only taken at all *en passant* to gain some hospital experience. No one dreams of such posts as permanencies. On the other hand, when the salary and conditions are at all reasonable, there is usually an excessive number of candidates. For the medical officership at the Langho Epileptic Colony, where the salary offered was £250, in spite of the responsibility and the amount of work which is attached to the post, there were 54 candidates, while for the three medical inspectorships of school children for Manchester there were over 80 candidates. The *Medical Directory* for 1909 shows that, after allowing for deaths and the removal of names from the list for various causes, there was a total increase of registered practitioners of 289 over the previous year. The absurdly cheap club practice that is undertaken in Manchester would, one would have thought, have been sufficient proof that the profession is overstocked; but, even if it become doubly overstocked, it is not at all likely that boards of guardians will ever have an excess of candidates for their resident posts so long as the guardians remain what they are, and the conditions of service under them remain unaltered. It is far more likely that the guardians themselves will have disappeared long before there is a "famine of medical men."

NEWCASTLE-UPON-TYNE.

THE ROYAL VICTORIA INFIRMARY.

AT the annual court of governors of the Royal Victoria Infirmary, held last week, the adoption of the annual report for 1908 was moved by the Lord Mayor of Newcastle-upon-Tyne and seconded by Sir George Hare Philipson. The infirmary is now in full swing, and gives accommodation to 425 patients. The expenditure for last year amounted to £30,892, while the income was £25,552, of which upwards of £14,000 was contributed by workmen's subscriptions. Taken on the total ordinary expenditure, the cost per in-patient was £4 1s. 10.2d., and the cost of per occupied bed £78 11s. 5d. Arrangements are in progress for a reorganization of the pathological department whereby the officer appointed shall give his whole time to pathology in the infirmary and the College of Medicine.

The interest of the annual court, which was attended by nearly 600 governors, centred round the chapel question. For the last twelve months the chapel, which had been consecrated, was closed for religious services in accordance with the decision of the last annual court. For many years past at these annual meetings the chair has been occupied by the chief magistrate of the city, and last Saturday afternoon it was filled by the Lord Mayor of Newcastle, who on his own initiation brought forward a scheme which he hoped would secure peace and remove discord. He suggested that a committee should be formed composed of four members chosen from the House Committee of the infirmary, four by the Workmen's Representatives, and four by the Free Church Council to confer with him as to the best means of settling a dispute which has given no satisfaction either to Nonconformists or Churchmen, and which has deprived the inmates of the infirmary of the opportunity of attending religious services in the institution. The Lord Mayor promised to bring the decision of this conference before a court of governors within three months. At one stage of the proceedings there were evidences of disagreement and of a considerable warmth of feeling, which was rather hostile than friendly to the proposal unless in some ways amended, but in the end good sense prevailed. Meanwhile, Dr. Hume, who all along has taken a keen interest in the matter, asked to be allowed to withdraw from the agenda a proposal standing in his name. It was thought that nothing would be lost by adopting the proposal of the Lord Mayor.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.

The banquet of the Northumberland and Durham Medical Society, announced for March 18th, and at which Sir Lauder Brunton is to be the guest, promises to be very successful. Those who have not intimated their intention to be present should do so at once to Dr. Wm. E. Hume, Royal Victoria Infirmary. An address will be given by Sir Lauder Brunton in the afternoon in the College of Medicine, and to it all medical practitioners are invited.

THE WEST STANLEY EXPLOSION.

At the adjourned inquest on the West Stanley Explosion interesting evidence was given by Drs. Benson and Charles, of Stanley, in regard to the 168 miners who were killed. Those killed by carbon monoxide numbered 121, those killed by direct violence 25, while 19 died from other causes. The explosion must have been very violent judging from the mangled and disfigured appearance presented by the dead bodies. In eight instances the head was terribly shattered, in a few cases being almost blown off.

SHEFFIELD.

EDINBURGH UNIVERSITY CLUB.

THE fourth annual dinner of the Sheffield Edinburgh University Club was held on February 6th, under the presidency of Dr. H. J. Clarke, of Doncaster, and was attended by about 120 members and guests. Emeritus Professor Crum Brown was the guest representing the University of Edinburgh, the other two guests of the club being the President of the British Medical Association, Mr. Simeon Snell, and Dr. Sinclair White, who had been Local Honorary Secretary at the recent meeting of the Association.

Professor Crum Brown made an interesting speech reminiscent of old Edinburgh days, referring, among other matters, to his acquaintance with Syme, and touching also upon what was uppermost in the thoughts of many of those present, the recent death of Dr. Argyll Robertson.

Mr. Snell, replying as President of the British Medical Association, referred to his friendship with Dr. Argyll Robertson extending over many years. He mentioned that among many great kindnesses he had received at his hands was the manner in which he early stated his intention of leaving his retreat in Jersey to come to Sheffield to support him when President of the Association. This he accordingly did, and was one of the most prominent figures at the meeting; no one then could have thought that he would be so soon removed.

WEST YORKSHIRE.

PROPOSED REBUILDING OF THE ROYAL INFIRMARY, BRADFORD.

THE annual meeting of the donors and subscribers to this hospital was held at the Town Hall, Bradford, on February 26th, the Lord Mayor presiding. There was a large attendance. The Chairman of the House Committee, in proposing the adoption of the report, pointed out that the work of the infirmary during the past year had been of an exceptional character. The number of in-patients treated was 2,652, whilst the highest number treated before in one year was 2,500. Five years ago the number was 250 less, and ten years ago 500 less. The increase had been largely in surgical cases. The average duration of residence had been twenty-six days in place of twenty-five, and the daily average number of patients had been 188—seven a day more than in 1907. The average cost per in-patient had been £4 2s. 7d. as compared with £4 6s. 4d. The infirmary was overcrowded and really required rebuilding. The Lord Mayor emphasized the urgent necessity for a new infirmary. It seemed to him that it would be impracticable to erect new buildings on the same site.

Dr. Horrocks pointed out that major operations in 1887 numbered 173; last year the number was 1,512, although the number of beds was exactly the same. For the past six or seven years there had been almost constant overpressure. There was always a waiting list of patients, and patients had frequently to be sent home before their wounds were quite healed. Many chronic cases had to be refused and palliative treatment had frequently to be curtailed. He strongly objected to any proposal for municipalization of the hospitals. "Every one," he said, "who paid rates would be eligible for admission, and the pushing and energetic would soon occupy the beds to the exclusion of the poor and needy. The staff, instead of

being voluntary helpers, would become officials, and as there were thirty-two doctors, it would be necessary to reduce the number, as it would be impossible to pay so many of them adequately."

The Lord Mayor, in replying to a vote of thanks, said: I think this meeting has pledged itself to a new infirmary, and hope that subscriptions will come in thick and fast." We believe that this is a wise decision, and hope it may soon be realized. The difficulty, of course, is in raising the necessary funds. Trade in Bradford is bad, and it will require extraordinary efforts to raise a sum of, perhaps, £150,000 to £200,000, which will be necessary adequately to equip and build a new hospital.

Scotland.

[From our Special Correspondents.]

State Registration of Nurses.

A meeting to consider the advisability of promoting a separate bill for the registration of nurses in Scotland was held in Glasgow on February 27th. Lord Inverclyde presided over a large assembly, which was thoroughly representative of the nursing profession throughout Scotland, and included delegates from many public bodies and institutions. The Chairman explained the genesis of the movement in favour of a separate bill for Scotland. The chief objections to the English bill from the point of view of the Scottish nurses were: (1) that the entire control of the training and registration of nurses in Scotland would be handed over to a council sitting in London on which Scotland had no direct representatives; (2) the fees suggested seemed unduly large—namely, 3 guineas for examination and 2 guineas for registration, especially in view of the fact that the examination was to be held only at centres which would necessarily entail additional outlay for travelling and hotel expenses; (3) the English bill required a nurse to undergo special examination for registration purposes no matter what certificate she might obtain from her teaching school; (4) it was felt that the examining body might possibly consist of individuals who had no direct interest in maintaining the high standard at present held in Scottish nursing. To meet these objections special legislation for Scotland seemed advisable; a bill had accordingly been drafted by a small committee, and had been sent to all nurses in Scotland. The meeting had been convened to determine whether the Scottish nursing profession approved of the general principles laid down. They differed from the English bill in several points. The central council was to be thoroughly representative of the various nursing branches and medical authorities. The fees for registration were to be much smaller and were to be kept as low as was compatible with meeting the working expenses. The examinations were to be held at the various teaching centres, and were to be left as far as possible in the hands of the training school, with supervision by the Registration Council to maintain an adequate standard. It was claimed that this draft bill more adequately represented the recommendations of the Select Committee which reported to Parliament in 1905 on the question of State registration. To determine the feeling of the nursing profession in Scotland, a plebiscite had been taken and the opinions recorded were overwhelmingly in favour of the draft bill. Dr. Mackintosh, who spoke next, stated that the plebiscite showed 2,718 were in favour of the establishment of a separate registration council north of the border. Thereafter a number of ladies and gentlemen representing various branches of the nursing profession spoke in favour of the draft bill. It was noticeable, however, that the mental representatives, who have already had several years' experience of the working of the medico-psychological examination, approved of the proposed bill subject to the condition that the standard adopted for mental did not fall below that of the medico-psychological certificate. At the close of the meeting a resolution was passed, almost unanimously, that Parliament be solicited to pass an Act for the registration of nurses in Scotland. An amendment received only seven votes.

Prevention of Excessive Infant Mortality.

The Anderston Health Association, at the time of its inception, aroused considerable opposition among local practitioners. Some aspects of the scheme, however, were above criticism. Thus, with the view of reducing infant mortality, a bounty scheme, with systematic visitation, on the plan of the Huddersfield experiment, was started. The funds for this scheme were given anonymously, and it was started in January, 1907, and came to an end on December 31st, 1908. The streets selected were among the poorest of the district. In all, 137 births were registered under the bounty system. To enable a proper comparison of the effects of the bounty system to be made, the medical officer of health furnished official statistics of the birth-rate and infant mortality in the streets selected for the experiment. The total number of births was 462, with 97 deaths, showing a mortality of 210 per 1,000. The death-rate among the registered children was only 138 per 1,000. The corrected mortality of unregistered children thus amounts to 240 per 1,000. The registration bounty scheme has, apparently, lowered the death-rate by 102 per 1,000. The interesting experiment of a bounty scheme, therefore, proved very satisfactory in practical working, as the mortality had been reduced nearly two-thirds in the particular streets selected for the experiment.

Ireland.

[From our Special Correspondents.]

Dublin Hospitals Tuberculosis Committee.

Sir John Moore presided on Monday last at the first annual meeting of the Hospitals Tuberculosis Committee, when the report of the year's work was submitted. This committee looks after the outdoor patients reported by the hospital staffs, and sends nurses to attend upon those who require their services. In this way 274 families were visited during the year, and 7,087 visits were paid; 35 per cent. of the patients had shown distinct signs of improvement, 10 per cent. had been able to resume their ordinary work, 81 persons had been admitted to sanatoriums, 110 rooms had been disinfected. Nutritious food had been supplied to 106 families.

Irish in the National University.

The Gaelic League is not quite satisfied with the prospect of inducing the Senate of the National University to make Irish compulsory for entrance. It is known that many of the stronger members regard such a rule as dangerous to the future of the institution, and will vote against it. The Bishops have not altered their opinion, and so it is most probable that when the proposal comes up for decision, in some months, it will be defeated. The league, small as it is, is active, and it is now calling upon the various district and county councils to refuse to levy any tax for scholarships unless their demand in reference to Irish is granted. The Dublin Corporation and a large number of councils throughout the country have come to this decision, in the hope that the Senate may be starved into acquiescence.

Typhoid Fever in Dublin.

In the autumn of 1908 there was an outbreak of typhoid fever in the Clontarf district of Dublin, where there is a population of some 5,000 persons. In a special report, which has just been issued, Sir Charles A. Cameron describes certain characteristic features of the outbreak, which point to a milk-borne origin. He was unable, however, to place his hand on the person by whom the infection was started. This being so, a difficulty arose as to what action could be taken with respect to the sale of milk from the suspected premises. In the absence of any knowledge of disease in connexion with any one in the dairy, the law agent of the Dublin Corporation was of opinion that the provisions of Section 4 of the Infectious Disease (Prevention) Act, 1890, could not be enforced, and this opinion was endorsed by Mr. Ignatius O'Brien, K.C. On the other hand, Mr. Vanston, K.C., the law adviser of the Irish Local Government Board, expressed a very decided opinion that the section was capable of being very widely construed, and he apparently considered that the Corporation possessed the power to stop the distribution of milk from the dairy in question. In the course of his investigations as to the cause of the outbreak, Sir Charles Cameron was on the alert for possible carrier cases, and he induced the proprietor of the dairy to submit

to bacteriological examination the excretions of the persons connected with the dairy. It is to be regretted that the results of these examinations have not been made public, though the responsibility for this does not lie with Sir Charles, who appears to have dealt with the outbreak in a thorough and vigorous manner.

Canada.

[FROM OUR SPECIAL CORRESPONDENT.]

THE MEDICAL CURRICULUM.

THE Ontario Medical Council has decided that a two months course in electro-therapeutics shall be added to the requirements of the curriculum for admission to practice, and that in examination questions no proper names be used to designate diseases.

THE MEDICAL FACULTY, TORONTO UNIVERSITY.

Dr. C. K. Clarke, of the Toronto Hospital for the Insane, has been appointed Dean of the Medical Faculty of the University of Toronto in place of Dr. R. A. Reeve, who resigned after twelve years of arduous service.

THE NATIONAL SANATORIUM ASSOCIATION.

The trustees of the National Sanatorium Association have appointed Dr. Alfred H. Caulfield, who was trained in the laboratory of Sir Almroth Wright and who has been recently resident pathologist to the Toronto General Hospital, as resident pathologist to the Muskoka Sanatorium and Free Hospital for Consumptives, where he will give all his time to the study of the problems of this disease.

Special Correspondence.

BERLIN.

Compulsory Vaccination.—Statistics of the Charité Hospital.—Rules for Hospital Administration.—A Tuberculosis Charity Kitchen.

AN important decision, bearing on the question of compulsory vaccination, has been given by the Prussian High Court of Administrative Law (*Ober-verwaltungs Gericht*). The facts of the case are shortly as follows: A number of Magdeburg mechanics had failed to present their children for vaccination at the age and within the limits of time stipulated by the Prussian Vaccination Act, and had been fined accordingly. Three years having elapsed without the children being vaccinated, the President of the District (*Landrath*) ordered the fathers to comply with the law without further delay, or the children would be forcibly vaccinated. Against this order the fathers lodged a remonstrance, setting forth that they had conscientious objection to vaccination as injurious to the constitution, and arguing that the Act, though it speaks of a fine to be inflicted in cases of non-compliance, nowhere makes mention of a power to enforce vaccination against the will of parents. The remonstrance was dismissed, and an appeal to the Supreme Court of Administrative Law met the same fate. The court based its verdict on the words of the Act, that—except in certain individual cases, where it would be fraught with danger to life and health—*all* Prussian children must submit to vaccination.

A set of very detailed, and therefore valuable, statistics have been published by the Charité State Hospital for the year 1906–7. The year began with 1,177 patients in the wards, and 14,485 more were received during the twelve months; 2,543 children were born in the hospital, and counting these, 13,889 persons were dismissed in good health or cured; 1,863 persons were dismissed uncured, 1,382 died. The 15,596 patients required 421,778 days of treatment, that is, the average was 27 days' stay in hospital per head; 9,855 days were gratis, 256,804 days were at the charge of the Berlin Municipality, 115,119 days at the charge of sick clubs and similar institutions. The medical staff consisted of 13 medical and surgical directors or chiefs, all of them Professors in the University, 55 medical and surgical heads of departments, head physicians and surgeons, and assistant physicians and surgeons—among these 20 military surgeons and 1 female doctor; 82 Sisters, 4 midwives, 96 male and 115 female nurses; 4 wet nurses had charge of the patients, and were assisted by 34 male servants and 25 housemaids; 19 men composed the service of the laboratories. The administrative staff consisted of a head medical and a head managing director, a professional lawyer, 25 cashiers and office clerks, 9 clerks for the food department, 4 clergymen, an organist, 4 druggists, 18 subordinate clerks, 146 mechanics and men servants, and 109 female servants.

For some time the Prussian Cultusminister has been occupied with plans for putting the medical direction of hospitals on a uniform basis. After consultation with the Representative Body of Doctors (*Aerztekammer*) and its Central Committee, certain fundamental rules have been worked out and officially published. At the head of every institution for care of the sick there is to be a responsible medical administrator of independent powers who superintends both the general care of the patients and all hygienic arrangements. All larger hospitals—counting as such establishments with more than thirty beds—must have further a doctor-in-chief, responsible for the treatment of each patient, or head doctors or head surgeons for the various departments. This is to be interpreted without prejudice to specialists, who may be doing work in the hospital. In lesser public hospitals, especially in small towns, and likewise in private hospitals, sanatoriums, and private nursing homes, etc., outside doctors are to be allowed to treat patients of their own, or may assist the hospital doctors, always under the sanction and responsibility of the head medical administrator. The Cultusminister defines as "public" all hospitals or institutions for the sick worked without special concession.

It must have been gratifying to Frau vom Rath, a charitable Berlin lady of great experience and ability, to receive Robert Koch in her "model kitchen for supplying the tuberculous poor with strengthening meals," since this institution was founded and endowed solely by her without any appeal for subscriptions, and its work is carried on under her constant personal supervision. No less than 180 units—families and single persons—are supplied from this kitchen daily, at a cost of 40,000 marks (£2,000) per annum. Frau vom Rath keeps to a strict rule, which excludes from the benefits of the charity all who do not use their best endeavours to keep their homes clean and hygienic. Thus, and thus only, can she hope to do more than benefit single cases of the disease. Professor Koch inspected all the rooms of the establishment, examined in detail all the arrangements, and informed himself of the kinds of food provided and their mode of preparation, the transport appliances, and so forth. Everything he found so carefully and thoughtfully planned, and so conscientiously executed, that he could only express his warmest admiration, and his conviction that the "tuberculosis charity kitchen" would form a valuable weapon in the fight against the terrible scourge.

Correspondence.

THE POOR LAW COMMISSION.

SIR,—Your second admirable article dealing with the report of the Royal Commission on the Poor Law deserves more than passing attention. It brings out what the Minority Report has startlingly emphasized—namely, the exceedingly high infant mortality that prevails among the children committed to the care of the Poor Law institutions of the United Kingdom. If these figures are correct, then the death-rate is two or three times as high for Poor Law babies as it is for the rest of the infant population of the country. That there is something radically wrong in the way in which infants are dealt with in these institutions is shown by the unwholesome diet, the absence of the means for rest, air, and exercise, which were personally observed and recorded by members of the Royal Commission. If further evidence were needed, there is condemnation enough in the facts that legitimate and illegitimate birth-rates are about equal and that the mortality is actually higher between the end of the first month and the sixth month than in the first four weeks of life.

We see at the present time that, in order to combat the existing widespread physical unfitness of the population, public health authorities are making special efforts by

means of health visitors, infant milk dépôts, and the early registration of births to reduce the general infant mortality rate, whose height is a fairly good index of the health condition of the population generally. At the same time another department, staffed by officials paid out of public funds, and actually under the supervision of the Local Government Board itself, is responsible for a condition of things that is literally characteristic of the worst slum areas of the great towns!

We have here something more than an instance of the absurd overlapping of functions of two departments of local government. It is a clear demonstration of the fact that the proper authority to take charge of pauper infants is surely that to which the care of the general infant population is at present entrusted, namely, the Public Health Authority—the body whose knowledge and interest lie in the direction of taking special precautions to preserve life. At the present time one authority is spending money and time to reduce the infant death-rate while another is keeping it at a level which, if it occurred in an ordinary urban district, would result in an official inquiry by a medical inspector of the Local Government Board.

It is imperative, then, that in order to set the public mind at rest a searching official inquiry should at once be instituted into the question of the infantile mortality in all Poor Law institutions, and a report made on the general conditions of life in so far as they affect the destitute child population of the kingdom. We must know to what extent the figures of the Minority Report represent the prevalent conditions in workhouses. The burden of the present highly unsatisfactory system for the relief of the poor appears to be falling with peculiarly cruel severity on those who at least can claim no responsibility for their unhappy condition.—I am, etc.,

London, W., Feb. 28th. F. LAWSON DODD.

FRIENDLY SOCIETIES AND THE MEDICAL PROFESSION.

SIR,—We must all be grateful to Dr. Pearse for his admirable speech at the conference, covering every point, extenuating nothing, setting down nought in malice, so admirable as almost to debar criticism or suggestion. Yet, since he declined to offer a solution, may I suggest that the solution will be found in the operation of the economic law of supply and demand?

Dr. Pearse said "he was persuaded that if nothing were done, an increasing number [of medical men] would decline to have part or lot in contract practice." I suggest that this opinion is unwarrantably optimistic, and that the friendly societies know as well as we do ourselves that whatever remuneration they offer, they will never lack competent doctors. As Mr. Moffrey (Oddfellows) said later: "A friendly society's practice was perhaps as important to the medical man as it was to the society . . . though it might be a mere pittance, the societies found that when a vacancy occurred others were ready to step in and carry on the work."

There is no doubt that the latter statement is correct, and if so the societies' position is unassailable: as long as there are more sellers in the market than buyers, prices must fall; that there is an excess of sellers who can doubt? In Bristol the other day for the school medical officerships thirty-seven of the best men in the city applied, and there were appointed two hospital physicians and three others at a salary 30 per cent. below the minimum fixed by our Association. A year ago the guardians received and accepted from a qualified man an offer to attend pauper children at 6d. a visit. The manager of a factory to which I am medical officer told me that at the time my predecessor sold me his practice another doctor (whom he named), hearing of the change of incumbent, actually applied at the factory to take on the penny-a-week sick club which formed part of the practice I had paid for.

What is the remedy, and where does the law of supply and demand come in? I submit that we accept contract work because there are too many of us, and that supply is here in excess of demand simply because of ignorance among the public as to what the practice of medicine offers as a livelihood. The middle and upper class public knows nothing of the general practitioner's financial worries; it judges the profession by the carriages of its own particular medical advisers, and does not realize that the majority of doctors get their living by services rendered to the majority of the nation—the very poor. The teachers at our universities and colleges have never a word of warning for their students as to their prospects after qualification, and, as Dr. Pearse says, "many a man who began his work with enthusiasm finds his professional life embittered by the evils of the contract system, which blights his hopes, stifles his ambition, and destroys his love of work."

The contract system is far more extensive than any one has publicly remarked; in this large town there is hardly a factory without a sick club and medical officer, and from half to three-quarters of the population must get medical attendance in this way or through hospitals and dispensaries.

The remedy is to cut down the supply of doctors, and this can only be effected by being frank about our affairs. Give the public a sight of the annual report of our benevolent fund, with its pitiful list of widows and orphans needing assistance; let them note, also, the paltry doles of £1 a month, which is all we survivors can afford from our own precarious incomes; it could not fail, I should think, to affect adversely the matriculation of medical students at our schools next term. With the thinning of our ranks, our hands will be untied to carry on this "battle of the clubs" with success, and with a better income and freedom from worry, I am sure we most of us would be better doctors. I have always thought that medical practice demanded undivided thought, and that any worry, financial or otherwise, militated against my patients receiving the attention I desired to give them.—I am, etc.,

February 13th. ECONOMIST.

PATENT MEDICINE AND QUACKERY.

SIR,—On February 25th the Home Secretary favourably received a deputation of newspaper editors and proprietors on the subject of newspaper lotteries and competitions, and promised to do his best to introduce legislation to provide a satisfactory remedy. If the Government can provide legislation to prevent foolish people throwing away their money, how much more should it promote legislation to prevent a still greater proportion of fools losing not only their health but even lives by the ingestion annually of hundreds of thousands of pounds' worth of patent medicines!

Only a few days ago a jury in Manchester, according to a Manchester evening paper, after being absent about twenty minutes, "found that the life of the deceased was shortened by his taking Dill's mixture (a diabetic 'cure'), and by his not continuing on the advice received from his Nottingham doctor."

The remarks of the Home Secretary relatively to newspaper competitions might have been truly spoken with regard to this subject: "These . . . were sometimes harmless. They were rarely useful, frequently mischievous, and not infrequently fraudulent. Taken on the whole, they were degrading to all concerned." Those who have read the reports of your analyses of secret compositions could vouch for the accuracy of these words as applied to them.

As you have previously pointed out, other countries—for example, Australia and Germany—are providing the necessary legislation to get as near as possible to the root of this canker. Would not this be a favourable opportunity for a deputation from the Association to approach the Government with regard to the whole question, the newspaper precedent acting as a lever should any hitch occur? The evidence at the disposal of such a deputation would surely be convincing enough for any Government to make a move.

The day on which the newspaper deputation account was printed I wrote on the subject to one of the London dailies which seemingly can move mountains with a stroke of the pen; but the letter has been ignored, probably because it was stated that, until the Government did certain things, "just so long will this great gullible public, which urgently requires State protection, swallow the rubbish, as it does the barefaced, lying assertions printed for its benefit (!) in the advertisement columns of every newspaper."—I am, etc.,

Manchester, March 1st. G. H. GRANT DAVIE.

THE APPLICATION OF MENDELIAN RULES TO HUMAN INHERITANCE.

SIR,—Professor Karl Pearson, in his last letter, gives way on the two points under discussion, but again shoots off at a tangent more than once.

The essential points in dispute, as I have already explained—and I think *clearly* explained—are two, both concerning Nettleship's chart. I have divided it into two parts. The first begins with Jean Nougaret, and includes all the abnormals; the second part begins after the last abnormals.

The first part, I contend, is Mendelian—almost mathematically so—and could not be interpreted otherwise. Professor Pearson says that he does "not feel in a position to say what Mendelians would have considered" about it. Yet it seems to me so striking an example of Mendel's law that it might have been quite as suggestive to Mendel as were his results with peas, for even with peas he seldom, if ever, got the exact 50 per cent. required by his theory, the element of chance accounting satisfactorily for any discrepancy.

With regard to Professor Pearson's reference to assumed sterility of the last abnormals not being in accord with any known law of Mendel, I am not aware that any one has ever said it was. Certainly this idea has never been assumed in my previous correspondence. Professor Pearson surely can think of other ways by which the same result would be attained (by celibacy, prudential considerations, early deaths). But this matter does not concern the points in dispute.

The second point is that some new factor must have come into operation where Mendel's rule begins to be inapplicable. Professor Pearson says "he does not quarrel with the statement"; and this is surely a complete surrender. So that the net result is this: (1) He does not know what Mendelians would think about the first part of the chart; and (2) he does not quarrel with my interpretation of the second part.

How he can reconcile his applying, in his earlier letters, such caustic epithets to my suggested explanation of the second part of Nettleship's chart with his present surrender I cannot imagine; unless it be that he at last understands my views and sees their reasonableness. But Professor Pearson goes further, and says: "There will, I feel quite certain, be other difficulties to be cleared up about change of dominance." Here he explicitly admits that change of dominance is a definite factor, in spite of his previous ridicule of such an idea.

There is one more point on which I must put Professor Pearson right. It is Professor Cossar Ewart and Professor J. A. Thomson who seem to believe that prepotency may change in the mating. For my part I do not believe that it occurs in man, for I am not aware of any facts in man which support that view, though I certainly believe that prepotency may change with a change of mate, that is, it is relative.

There is one point, I am pleased to say, about which we are agreed, and that is the urgent need for the collection and publication of facts bearing on this subject. No one in this country has been more enthusiastic and diligent in this respect than Professor Pearson, and I would earnestly ask medical men to embrace every opportunity of constructing charts of hereditary disease or abnormality in the human subject, and to make their observations accessible to the profession at large.—I am, etc.,

Wrexham, March 1st. H. DRINKWATER.

MR. GLADSTONE'S SLEEPLESSNESS.

SIR,—In his very interesting paper, On Sleep and Want of Sleep (BRITISH MEDICAL JOURNAL, February 27th), the Right Hon. Dr. R. Farquharson states:

"They say that the only time Gladstone went off his sleep was during his anxiety for Gordon during that anxious time at Khartoum."

That there has been at least one other cause which during his political career robbed him of his sleep I have heard from Mr. Gladstone's own lips. When I saw him on February 2nd, 1886, the day he had begun to form his third Administration, I found him very haggard and careworn looking. On my remarking that he seemed rather tired, he replied *verbatim:* "That Irish business does not let me sleep a single night."—I am, etc.,

London, W., March 1st. FELIX SEMON.

ARTERIAL BLOOD-PRESSURE RECORDS BEFORE AND AFTER MUSCULAR EXERTION.

SIR,—If I understand correctly Dr. O. K. Williamson's remarks on arterial blood pressure, in the JOURNAL of February 27th, p. 530, he regards 160 to 170 mm. Hg as "the measurement which is probably near the limit of the reserve power of the normal heart," pointing to "the improbability that the heart in morbid conditions would be capable of overcoming pressures greater than this"; and therefcre very high readings—200 to 300 mm. Hg—represent something more than the pressure of the blood itself.

Of course, I quite agree with Dr. Williamson that the resistance of the arterial wall must count for something, but I cannot follow him when he assumes that the heart in morbid conditions cannot overcome greater pressure than a normal heart.

In the *post-mortem* room it is not an uncommon thing to find in cases of arterio-sclerosis a greatly hypertrophied heart, the muscle of which is healthy both macroscopically and microscopically, and surely such a heart is capable of overcoming pressures much greater than normal; is it not, indeed, probable that the great hypertrophy of its left ventricle has been brought about by the demand for increased blood presure, a pressure greater than that which a heart of normal size could produce?—I am, etc.,

Birmingham, Feb. 28th. LEONARD G. J. MACKEY.

USE AND ABUSE OF ALCOHOL.

SIR,—In correction of the statement attributed to me on page 535, BRITISH MEDICAL JOURNAL, February 27th, that alcoholism was responsible for the diminishing birth-rate, I beg to point out that, in reply to one of the speakers who made that statement, I said that it might be one of the factors producing such a result, but that it must not be forgotten, as taught by Herbert Spencer, that genesis varies with individuation, and that the higher and more complex the organism the lower the rate of increase—savages breeding more freely than civilized people, and even amongst the latter it was the lower classes that had the most children.—I am, etc.,

G. T. COLLINGWOOD,
London, S.W., Feb. 27th. Fleet Surgeon, R.N.

THE MEDICAL ASPECT OF DENTISTRY.

SIR,—My attention has been drawn to a statement in Professor Pickerill's most interesting and instructive article in the issue of February 13th to the effect that "Dr. Dauber, of the Hospital for Women, Soho, has recently come to the conclusion that septic teeth have a distinct influence upon uterine and ovarian conditions, and gives many instances in which the gynaecological lesion has only yielded to treatment after the oral conditions have been corrected."

My lecture, "Oral Sepsis and its Relation to Abdominal Disease," to which Professor Pickerill refers, was reported in *The Hospital* of February 8th, 1908, and reprinted in the *British Dental Journal* of April 1st, 1908, and there is no single sentence in it conveying this meaning. My actual words were these:

> Strictly as one may attempt to limit cases coming here (the Hospital for Women, Soho) to those of purely gynaecological interest, yet patients are unable to diagnose their own complaints. A certain percentage attend who, either in conjunction with or apart from pelvic mischief, are suffering from conditions attributable to deficient nutrition, general septic absorption, toxaemia, or some form of inflammation or colic of one or other portion of the alimentary canal.

I then proceeded to demonstrate the frequent association of such cases with oral sepsis in one form or another, and said that:

> My own out-patient experience leads me to believe that, if the mouths and teeth of the population were kept in a healthy state, we should seldom hear of gastric and duodenal ulcer, and the entire large class of dyspepsias. There would be far less malnutrition and emaciation resulting from toxaemia and the ingestion of insufficiently masticated food. Appendicitis would be less frequent, etc.

To associate diseased conditions of the digestive tract or constitutional sequelae secondary to such conditions with sepsis of the oral cavity, itself the first part of the alimentary canal, is a very different matter to attributing uterine and ovarian disease to oral sepsis. The connexion

in the latter case must be very remote, and, except that all parts of the organism are inter-connected through the vascular and nervous systems, may, I think, be safely disregarded.

My point was that the uterus and its adnexa were often credited with being the cause of many complaints when, in truth, they were healthy, but the abdominal viscera at fault, and that these latter were thrown out of gear in the majority of cases by unhealthy conditions in the mouth. Professor Pickerill, although he quotes my lecture, cannot have read it, and as his article deserves to be, and doubtless will be, widely read, I desire to correct his interpretation of my remarks.—I am, etc.,

London, W., Feb. 26th. JOHN H. DAUBER.

TREATMENT OF RHEUMATIC AND RHEUMATOID ARTHRITIS BY RADIANT HEAT AND CATAPHORESIS.

SIR,—Dr. Gamblen raises a very interesting point *re* ultra-violet rays in his letter (p. 371), although it does not affect the view that better results in radiant heat treatment should be obtained by a very high candle-power lamp giving out a full-length spectrum (as like sunlight as possible), than from a number of low candle-power lamps with a limited spectrum. With this opinion his practical experience agrees.

The general belief with regard to all rays is that they are not at once abolished in passing through obstructive media, but are altered into rays of other wave lengths as they pass. It is possible, therefore, that, although ultra-violet rays may lose their distinctive character in the superficial layers of the skin, they may nevertheless pass on into the deeper tissues as other rays, which may be the real beneficial agents.

The blue fluorescence of quinine sulphate solution beyond the violet end of the spectrum is a case of change of wave-length. It has also been stated that although the ultra-violet rays when used alone only act superficially, they are in combination with other rays carried to greater depth.

Certainly chemical rays producing an effect on silver emulsion of a photographic plate must either have started from the sun as chemical rays, and been unaffected by their passage through great resistance, including the photographer's glass lens, or they began as other rays which have been gradually damped down until they arrive at the plate as chemical rays, and act upon it.

It is gratifying to hear that Dr. Gamlen has had many successes in the treatment by ionization, and I hope with him that other workers will send their opinions as to the value of the combined treatment.—I am, etc.,

Brighton, Feb. 7th. C. FRED. BAILEY.

Public Health AND POOR-LAW MEDICAL SERVICES.

INFANTILE MORTALITY IN WANDSWORTH.

IN the annual report for 1907 of the medical officer of health for Wandsworth, which has just been issued, Dr. Caldwell Smith points with satisfaction to the decrease in the deaths among young children in the whole borough. The infantile mortality-rate of 101 per 1,000 births was lower than any rate ever yet recorded, though, as might be expected, in the poorer district of Tooting the rate (148) is still high, and shows little evidence of decrease. This lessened mortality is attributed partly to the low average temperature in July, August, and September, but it must also be due to the work which has been carried out since 1905 by the two female sanitary inspectors. In 1907 they visited altogether 1,603 infants, of whom it is satisfactory to find as many as 1,255 were breast-fed entirely, and 174 were fed on the breast together with some other food. The death-rate among these 1,603 children was only 30 per 1,000, an excellent record when it is remembered that they are the children of the poor. Illegitimate children in Wandsworth, as elsewhere, have a much smaller chance of surviving their first year than children who are born in wedlock. In the whole borough the infantile mortality-rate among legitimate children was 97 per 1,000, while among illegitimate it was 296. It is worthy of remark that in the poor district of Tooting the illegitimate rate was 290, but in Clapham, where a better class of residents is to be found, it was as high as 351 per 1,000.

HEALTH OF LANCASHIRE.

THE medical officer of health for the county of Lancashire reports that the death-rate for the administrative county for the quarter ending December 31st, 1908, was 14.4 per 1,000, as compared with 13.9 in the December quarter of 1907. The epidemic death-rate, excluding diarrhoea, was 0.86 per 1,000, which is slightly lower than last year. There have been no cases of small-pox, but scarlatina, diphtheria, enteric fever, and measles have each had a greater prevalence than in the preceding quarter. Measles especially has been very prevalent, the schools having had to be closed in no less than fourteen districts. In some districts as much as 58 per cent. of the children in infant schools have had the disease, and in many other places from 35 to 50 per cent. have been attacked. A special report has been found necessary on the extensive outbreak of enteric fever at Tyldesley and Atherton. At neither place has any fault been found with the milk supply. At Tyldesley, up to the date of the report (November 23rd), 54 cases had been notified with 8 deaths. In 10 cases there was a history of eating mussels or oysters. Some suspicion fell on the water supply, which is obtained from the Manchester Corporation, and three samples were submitted to Sir Rubert Boyce of the Liverpool University. In each case the *Bacillus coli* was found in 10 c.cm. but was absent in 1 c.cm. At Atherton, between January 1st and October 19th, only 8 cases had occurred, but from October 19th to the end of the year 34 cases occurred with 7 deaths. In 13 cases the sufferers had partaken of mussels. The medical officer of health for Atherton says that the water supply, though not good, cannot be held responsible. In one sample the *Bacillus coli* was present in 50 c.cm. but not in 40 c.cm., while in another it was present in 40 c.cm. but absent in 30 c.cm. The coincidence of this outbreak with a similar one in Salford, which is ten miles away but receives the same water supply, ought to lead to a careful examination of the water coming from Thirlmere.

SETTLE DISTRICT INFECTIOUS HOSPITAL.

The new Infectious Diseases Hospital erected by the Settle Rural District Council at Harden Bridge, near Clapham, was formally opened on February 13th. The hospital has cost £5,680, exclusive of the cost of site and furnishing. It comprises a commodious administration block, with matron's rooms and premises for a caretaker, a scarlet-fever block with accommodation for 14 patients; a double isolation block for 6 patients, so arranged that diphtherial or enteric cases may be dealt with at the same time; and laundry, disinfecting chamber, and mortuary.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Chelmsford Rural District.—Calculated on an estimated population of 20,650 persons, the birth-rate in 1908 was 23.9 per 1,000 and the death-rate 13.9. The infantile mortality-rate was equal to 69 per 1,000 births. Dr. Thresh states that although medical practitioners in the district were asked several years ago to notify to him cases of pulmonary tuberculosis occurring in their practices, he had only been notified of one or two. In the grounds of the union workhouse three tents have been provided and are occupied by patients suffering from tuberculosis, who are said to do well under these conditions. Dr. Thresh suggests that additional shelters should be erected. There were nineteen deaths from phthisis in the Chelmsford rural district in 1908.

DUTIES OF WORKHOUSE SURGEONS.

C. E. D. asks whether the extraction of teeth comes under the heading of surgical operations in an agreement with guardians as medical officer to workhouse?

*** Unless there is some special agreement with guardians which relieves the medical officer of a workhouse of this responsibility, he is expected to provide the *requisite treatment* for all dental cases.

MEDICAL CERTIFICATION OF WORKHOUSE LUNATICS.

R. R. A. asks: What is the recognized practice in union workhouses in reference to the certification of lunatics? also, whether it is a professional or friendly act of a medical practitioner to enter a workhouse to certify patients at the request of a magistrate? Our correspondent adds that for fifteen years past the magistrates have employed the medical officers of the workhouse for this duty, but lately a new magistrate has changed the system.

*** The practice varies very much. We cannot regard it as a breach of professional etiquette for any medical practitioner to visit a workhouse to certify lunacy cases if requested to do so by the magistrate who is acting in the case, as many magistrates for their own protection prefer to call to their assistance a medical practitioner in whom they themselves have confidence. Notwithstanding this, we should regard it as unfriendly action for any medical practitioner to bring about any such change of system as that described by our correspondent by *soliciting* engagements for these special duties.

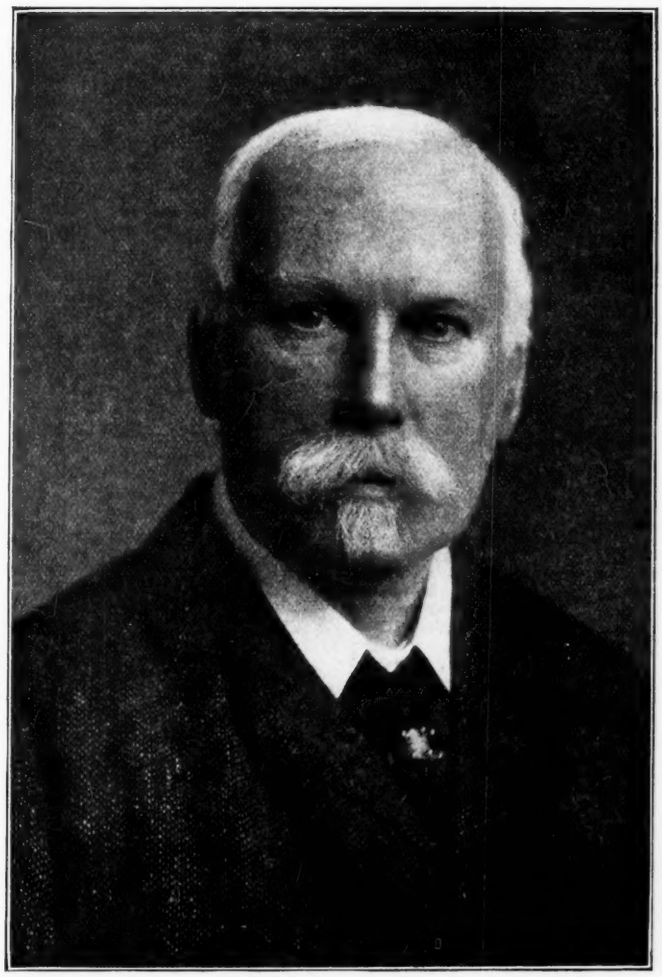
Obituary.

DAVID JAMES HAMILTON, LL.D., M.B., F.R.S.,

EMERITUS PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF ABERDEEN.

THE death of Dr. David James Hamilton, formerly Professor of Pathology in Aberdeen University, will occasion deep regret to a wide circle of former students and friends. As briefly stated in last week's issue, he died at his residence, Queen's Road, Aberdeen, on February 19th, after an illness extending over a period of nine months. From the first there was no hope of recovery, and at the comparatively early age of 60 years the science which he adorned has lost one of its most brilliant exponents and investigators.

David James Hamilton was a native of Falkirk, and studied medicine at Edinburgh University. After graduating he became a House-Surgeon of the Edinburgh Royal Infirmary, and subsequently held the post of Resident Medical Officer to the Chalmers Hospital in that city. At a later period he was elected Resident Physician and afterwards Resident Surgeon to the Liverpool Northern Hospital. His tenure of these offices extended over a period of two years, and during that time he had full control of the pathological department of the hospital. Pathology had a strong fascination for him, and it was then he decided to devote his whole energy to it. It is said that some of his medical friends tried to dissuade him from this course, being doubtful of the wisdom of his attempting to carve a successful career in a subject which at that time held a minor position in the medical curriculum. The reply was characteristic of the man: "If I can I will, and if I will I can," and his whole career was a justification of the confidence he placed in his own judgement. His special aptitude for the science of pathology was recognized by the medical staff of Guy's Hospital, who awarded him the Triennial Astley Cooper Prize of £300 for his pathological researches on the diseases and injuries of the spinal cord—a prize open for competition to the whole profession. Two years were afterwards spent in visiting and working in the pathological departments of some of the best Continental schools, including those of Vienna, Munich, Strassburg, and Paris.



DAVID JAMES HAMILTON.

He returned to Edinburgh, and was appointed Administrator of Pathology in the University, and under the direction of the late Professor Sanders he organized a course of practical pathology, and gave much more prominence to the teaching of that subject than had hitherto been accorded to it. He was also appointed Pathologist to the Edinburgh Royal Infirmary, and on the death of Professor Sanders he was selected to fill a similar post at the Royal Hospital for Sick Children. During Professor Sanders's illness, Dr. Hamilton, at the beginning of the winter session 1880–81, was chosen to deliver the lecture in General Pathology in the university, and he also organized a class of morbid anatomy and pathological histology in the School of Medicine similar to that which he had previously conducted in the university.

In 1882 came his appointment to the Chair of Pathology, which had just been founded by Sir Erasmus Wilson, in the University of Aberdeen. The task he undertook was no light one, but it gave him a great opportunity, of which he took full advantage. During the twenty-six years of his connexion with Aberdeen University he attained an outstanding position in the pathological world and won honour for himself and for the university. He organized and equipped the Department of Pathology both in the university and in the infirmary in such a manner as to make it a credit to both, and his conduct of the department on all its sides put the Aberdeen school of pathology in a leading position in this country. In the practical application of his subject to public health he was deeply interested, and he brought into use in the North of Scotland the bacteriological diagnosis of diphtheria and typhoid fever, and the examination of water by bacteriological methods. For many years his *Textbook of Pathology* has been regarded as a most valuable work. His powers as a teacher gave him a unique position, and there was perhaps no one in this country who had so many pupils occupying important positions all over the world as teachers of pathology and scientific investigators. In a university which is fortunate in the possession of many distinguished lecturers Dr. Hamilton occupied a foremost position. His lectures were models of scientific exposition, delivered in a most fascinating and lucid style, with an accuracy of phrase and happiness of simile that could not be surpassed. He constantly kept before his pupils the value of experimental methods, and instilled into them some, at least, of his own thoroughness; by his lucidity and vigour and singular individuality of character he had the faculty of arousing and sustaining the interest of his students and of inspiring them with his own enthusiasm. He did not believe in the ordinary set lectures, and latterly his course consisted of a series of demonstrations, during which he walked about. He made much use of chalk diagrams, many of them beautifully drawn in pastel, and of large models of such things as karyokinesis and other cell processes. There is no figure of an old teacher that the Aberdeen student can recall with greater accuracy than that of Hamilton in his daily march behind the rostrum in the lecture theatre, or in the practical laboratory or *post-mortem* room.

As to his many and notable contributions to the literature of medicine and science, it was said by the Dean of the Faculty, when presenting him for laureation as LL.D. in Edinburgh in 1907, that "the textbooks he had published, based as they are on data gathered through long years of study and observation, and reflecting, as they do,

the workings of a keen, unprejudiced, and independent intellect, deservedly enjoy a high reputation as illuminating and authoritative works." For two years he dealt with the pathology of bronchitis, catarrhal pneumonia, tubercle and allied diseases in the human being, in a monthly series of articles appearing in the *Practitioner*. He also conducted extensive investigations in connexion with the working out of the topography of the brain in relation to disease, the expenses being defrayed by a grant from the Royal Society of London. Dr. Hamilton was Morison lecturer for 1882 of the Royal College of Physicians, and took as his subject the recent pathology of the central nervous system. To agricultural science Professor Hamilton had rendered services of inestimable value. He was indeed a tireless investigator in a wide range of subjects. Pleuropneumonia, tuberculosis, and other diseases which affect cattle were investigated by him, but his reputation in that direction was earned in connexion with the discovery of the bacillus of "loupin' ill" in sheep. In the year 1881 he acted as chairman of a commission appointed by the Highland and Agricultural Society to make pathological inquiry into that disease and braxy. In 1897 he resumed the study of braxy privately, and subsequently received a grant from the Government for the purpose of carrying on his investigations. From an early stage good hopes of a successful termination of the researches were entertained, and in view of the truly national character and great importance of the work the Highland and Agricultural Society suggested that the inquiry should be taken in hand by the Board of Agriculture, and prosecuted to the fullest extent under the direction of Professor Hamilton. This was agreed to, and in 1901 he was appointed Chairman of a Departmental Committee, which presented its report in 1906. One result of these investigations was to establish Dr. Hamilton's discovery of the bacillus of "loupin' ill," the cause of which had not been known prior to 1901. The bacterial character of "braxy" was also established by him by researches, which confirmed the discovery of the specific bacillus by Ivan Nielsen in Norway in 1888. Another most important and interesting scientific inquiry with which he was also identified was that of the relation of human tuberculosis to that of bovines. The results of these investigations were published in 1903, and were directly opposed to those of Koch. The publication of subsequent reports has confirmed its conclusions. Professor Hamilton became a Fellow of the Royal Society last year. He was also a Fellow of the Royal Society of Edinburgh, and a Member of the Royal Medico-Chirurgical Society of Edinburgh, and of the Physiological, Pathological, and Neurological Societies.

A notable and striking tribute to his work was the issue in connexion with the university quatercentenary celebrations in 1906 of a volume entitled *Studies in Pathology*, consisting of contributions by his past students, designed also to commemorate the fact that he had all but completed a quarter of a century's tenure of the Chair of Pathology. The volume was edited by Dr. William Bulloch, and among the contributors were Dr. Leslie Mackenzie, Dr. Arthur Keith, Dr. A. R. Cushny, Dr. George Dean (who succeeded Dr. Hamilton in the chair of Pathology), Dr. G. M. Duncan, Dr. Alexander Low, and Dr. J. J. R. Macleod.

Professor Hamilton was a man of culture and refinement. He loved art and music, and was a discerning critic of both. One of the features in the excellent pathological museum which he built up in Marischal College is the collection of models of pathological specimens, most of which were painted by himself. He was deeply interested in architecture, and his knowledge of its principles was wide and accurate. Many will recall his outspoken criticism of the scheme of decoration carried out in the restoration of King's College Chapel. Professor Hamilton frequently lectured in public on subjects connected with art, and the attractive and popular gifts which distinguished him in the classroom were equally present on the platform. His resignation of the Chair of Pathology was deeply regretted by his colleagues, and cordial recognition made of his great services to the university.

Professor Hamilton was essentially a generous-minded warm-hearted man, and his death, regretted by old students in all parts of the world, will be greatly mourned by all who enjoyed his friendship and knew him in the private relationship of life. He was twice married, and his second wife, a daughter of Mr. John Wilson, South Bantaskine, Falkirk, died in June last year. Professor Hamilton is survived by two sons and a daughter. Both sons are in the medical profession — one in Liverpool and the other in the navy. The daughter is the wife of Dr. Thomas Lumsden, London. Mr. Geo. G. Hamilton, until recently Surgeon to the Royal Infirmary, Liverpool, was his brother.

The funeral took place on February 22nd from the university. The service was held in Marischal College, and the coffin, which was carried by four Shore Porters (a kind of guild), was preceded by the university senatus, professors, and other members of the university in cap and gown, and followed by the chief mourners. The whole two miles from the college to the cemetery was lined by people, who doffed their caps as the coffin passed.

We are indebted to Professor ALEXANDER OGSTON for the following personal appreciation:

It will be many years ere Professor Hamilton be forgotten in his university or in Scotland.

He came to Aberdeen in 1882 to raise the subject of pathology from the degraded condition into which it had fallen and restore it to its proper place in the medical school of Aberdeen. A strong man, a determined man, a brilliant man was needed, and Hamilton was all this.

Framed by Nature in a fighter's mould, with the head, the face, the physique of a combatant, we were not long in learning Hamilton's energy and force of character. From the first day of his professorship it was felt that his conduct of the chair was to be on a level above what we had seen here, or indeed in almost any other school in the world. Some of us knew the teaching of Rokitansky and the great Virchow, and our ideas were high-pitched; but Hamilton surpassed them. He started as a teacher far above the level of Virchow, and he continued his work to the end on a level that we could find nowhere else. A great defect was filled, and his colleagues as well as his students felt the benefit and responded to the stimulus.

Hamilton was not always right in his teaching. Who is? But at least his students left him knowing their pathology thoroughly, and it was better to know Hamilton's views well than to have drifted through the teaching of a feebler man. When he taught a thing he did it so that all his students understood and knew, and did not forget. A quarter of a century of strong men went out into the world well armed for their life-work and equipped with a goodly share of the energy and decision of their teacher.

But there was a softer side to our colleague. He was not all warlike. Once he knew a man to be straight and honourable, Hamilton showed him an unexpected aspect—that of the true, warm-hearted friend, who could be as kind and generous as brave and strong men are, and who never turned to the right or to the left in his straightforward friendship. In a school of medicine the tone of the teacher has vast power. If his nature be a low one it infects and destroys. Ideals are low, and the morale of the profession receives a blow that long echoes in its ranks. But Hamilton's influence raised all who came in contact with him. We loved him; his students loved after they had ceased to dread him, and I am sure no student ever went through our medical school without being a better man for having known Hamilton.

Of his scientific work I say nothing—it speaks its own tale; and this is a personal appreciation, solely. But it was worthy of him, as it was bound to be, for all his great heart was thrown into it. His department, the museum he created, influences us still, and will long do so. When the end comes for any of us, it is well, though it be given to few, to leave such a life-record behind as did Professor Hamilton.

The Right Hon. ROBERT FARQUHARSON, M.D., writes: I am glad of the opportunity of placing a wreath of cordial and heartfelt appreciation on the too early grave of my old, valued, and respected friend, the late Professor Hamilton. His death was not unexpected, nor, under the circumstances, to be regretted, for he suffered from an incurable and painful disease, made all the more sad by his own intimate knowledge of the lingering steps leading to the inevitable end. His was emphatically a life too short for friendship, not for fame, and his memory will always linger in the grateful affection of his numerous and attached pupils now scattered over the world, who will, I hope, erect some permanent memorial of their great master. Only a few years ago a distinguished foreigner, who visited Aberdeen, said, "If you want to learn pathology properly you must come to Aberdeen," and he was right, for he found there not only a perfect and complete laboratory installation, but the infectious enthusiasm, the wise dogmatism, and the breezy combativeness, which, whilst shattering old and worn-out beliefs, re-examined those which seemed to be finally established, and built up firmly on the ruins of what he destroyed. His interests were widely varied; he sang admirably, had more than a competent knowledge of art, and I cannot doubt that our mutual friend, David Murray, remembers a week-end at Finzean spent in a series of pitched battles between him and his formidable antagonist. Many of us will miss him long and deeply, and his premature removal will leave a distinct gap in the special branch of science to which he devoted all the energies of a vigorous and suggestive mind, and his excessive and continuous devotion to which undoubtedly impaired his strong physique. His *Textbook of Pathology* still holds the field, but what most especially interested me in my capacity of landed proprietor were the epoch-making researches he was carrying on into the varied diseases of animal and plant life. These were beginning to bear good and useful fruit, and I deeply mourn the lost opportunity of suggesting some fresh lines of investigation in the interest of agriculture.

We quote, by the kindness of the editor, the following paragraphs from an obituary notice written by Professor Hamilton's successor, Professor Dean, which appears in the issue of the *Edinburgh Medical Journal* for March:

Professor Hamilton was undoubtedly one of the leading teachers of pathology of his period in Great Britain. He spared no pains in making his lectures models of scientific exposition, and constantly kept before his pupils the value of experimental methods. His manner of lecturing was vigorous, incisive, and effective, with the result that he left on the students a vivid impression of the subject-matter with which he had been dealing. His whole system was a practical illustration of the value of first-hand knowledge obtained by observation on the part of the learner.

His teaching of pathological anatomy and histology was particularly effective. He would have the men see what was to be seen, and even the weakest men in every class were forced to carry away a certain amount of knowledge which they had acquired by their own observation under his compelling guidance. He thus trained those under him to become observers, and enforced on them the necessity of accurate method. He had no toleration for anything slipshod, and many have greatly benefited by his influence in this direction.

We also quote the following paragraphs from the same journal, written by one of Professor Hamilton's pupils during the time when he taught pathology in Edinburgh:

Amongst the old Edinburgh pupils of Professor Hamilton there can be but one feeling at his comparatively early death—that of the profoundest sorrow. Although it is more than a quarter of a century since he left Edinburgh, the impression made by his teaching is still fresh in their mind. They remember how he returned from Vienna full of enthusiasm for his subject, and with a thorough acquaintanceship with the then modern methods of pathological investigation, and how he triumphed over the difficulties in the shape of the miserably inadequate accommodation and equipment of the laboratory allotted to him, and made the first courses of practical pathological histology taught in Great Britain a conspicuous success. In these days practical pathology was a voluntary class, not required for graduation, but the influence of Hamilton's teaching was such that he attracted not only university students, but men from the extra-mural schools in Edinburgh and from other universities in Scotland. He had a marvellous faculty of compelling one, even in spite of oneself, to take an enthusiastic interest in his subject. It was simply impossible not to be attentive to and not to learn from Hamilton. His enthusiasm and the influence of his personality dominated every member of his class. While we recognized that he might not be always right in his views, we were constrained to be directly interested in his subject in such a way as to make it a working part of our mental equipment. Every one of us is grateful for his inculcation of the method of personal observation and for the mental discipline it gave us—much to be desired in these days of "spoon-feeding."

In Aberdeen he has trained up a school of pathologists whose works have already done honour to their university. In Edinburgh he had begun to do the same, and more than one occupant of a pathology chair owes his position to the direction given to his studies by Hamilton. All over the world there are men who have carried into their daily work the habits of close observation and of clear thinking, for which they can never cease to be grateful to their old master.

PETER HORROCKS, M.D., F.R.C.P.LOND.,

SENIOR OBSTETRIC PHYSICIAN TO GUY'S HOSPITAL.

WE regret to have to announce the death, at the age of 56, of Dr. Peter Horrocks, Obstetric Physician to Guy's Hospital. In the summer of 1907 he had some vesical haemorrhage, and about Christmas time some growth was removed by operation; improvement was obtained, but there was a recurrence of the symptoms some months later, and their increase was such that a more extensive operation was attempted on Wednesday, February 24th, 1909, but unfortunately only partial relief could be obtained, and he succumbed on February 28th.

Peter Horrocks was the seventh son of the late Mr. George Horrocks, of Farnworth, near Bolton. He matriculated at the London University, and having passed the preliminary scientific examination from Owens College, Manchester, he entered Guy's Hospital in October, 1873. There he promptly made his mark, taking a prize for general proficiency at the end of his first year, and passing the First M.B. of the London University at the end of his second year, with Honours in Physiology. In his third year he obtained the second prize, and a year later he secured the Treasurer's Gold Medal in Medicine, and

followed this quickly by taking the degree of M.B. with the Gold Medal in Medicine, marks worthy of the Scholarship, and Honours in Obstetric Medicine. In the following year he obtained his M.D. degree. This successful career marked him out for a place on the teaching staff, and he became a Demonstrator of Anatomy in due course. His intention at that time was to apply for the post of Assistant Physician at Guy's Hospital when a vacancy should occur; and while waiting he undertook the charge of the Electrical Department of Guy's Hospital, and was appointed Assistant Physician at the National Hospital for the Paralysed and Epileptic. He devoted himself there to the study of nervous diseases, and he entered upon a study of what was then a relatively new subject, and wrote for the *Guy's Hospital Reports* an article, Reflex Action in Diagnosis. He dealt fully with the matter, and supported his conclusions by original experiment. But this was not, after all, to be his life's work, for the impending resignation of Dr. Braxton Hicks led him to turn his attention to obstetrics, and he applied for and was appointed Assistant Obstetric Physician to Guy's Hospital, while Dr. Galabin was appointed to succeed Dr. Hicks as physician.

He threw himself into the duties of this post with the energy he had shown in all his other work, and soon attracted appreciative classes to his out-patient demonstrations and patients to his practice. Dr. Horrocks came into the field of obstetrics at the happy moment when the claims of the hospital obstetric physician to operate in any case of disease peculiar to women had been practically established, and he proved himself to be a bold and successful, at the same time careful, operator. He was a popular lecturer, for he had the faculty at all times, whether in consultation or *ex cathedrâ*, of putting what he had to say in a clear and emphatic manner, so that it was impossible to misunderstand either his meaning or his intentions; and the value of his opinion and of his manipulative and operative skill were such that his help was extensively sought for, and he comparatively early had a large practice, which he maintained until the end.

He was elected a Fellow of the Royal College of Physicians in 1889, was Honorary Secretary of the Obstetrical Society in 1890 to 1893, and President in 1901 and 1902, in which capacity he delivered two presidential addresses. He was not a great writer, but he made a few communications to the Obstetrical Society's *Transactions*, and delivered the Hunterian Oration before the Hunterian Society in 1898.

Horrocks was as full of physical energy as he was of mental activity. In his early days he was fond of boating on the river, but for some years he was devoted to alpine climbing, and in 1894 he had an experience in Switzerland which would have damped the ardour of most men effectively. While climbing a narrow ledge on the Zinal Rothhorn he was dragged from his steps by the slipping of a stone from under the feet of one of his guides. All three were hurled down the cliff. Horrocks was happily stopped by the rope catching on a projecting piece of rock; but one of the guides, from the breaking of the rope, was dashed down and killed on the glacier below. Horrocks and the other guide were luckily rescued by another party then on the mountain.

This hairbreadth escape did not prevent Horrocks enjoying the Alps on subsequent occasions; he did many climbs after this, and was among the mountains so recently as last year. He was a staunch friend; cheerful, genial, full of anecdote and reminiscence, with a keen enjoyment of an active, strenuous existence. He was unmarried, and his last year had been saddened, not only by his own threatening illness, but by the loss of more than one member of his family.

ACCORDING to statistics recently issued by the Austrian Minister of Education, the total number of students in the universities of Austria on December 31st, 1908, was 25,888; of these 4,324 were students of medicine. Vienna had 1,972, including 73 women; Innsbruck, 197; Graz, 361, including 4 women; the German University of Prague, 344, of whom 9 were women; the Czech University of Prague, 631, of whom 19 were women; Lemberg, 304, including 37 women; Cracow, 515, of whom 51 were women.

The Services.

ROYAL ARMY MEDICAL CORPS (TERRITORIAL).

EXAMINATIONS FOR PROMOTION.

WE have received the following communication:

I am a Lieutenant-Colonel in the R.A.M.C.(T.), and a few days ago I received a letter from the G.O.C. of my Division asking me when I was going to qualify for a Lieutenant-Colonel. I did not know until then I had to pass another examination, already having passed for Captain and Major. Upon looking up the subjects for examination, I found the following:

1. Army medical organization in peace and war.

2. Sanitation of towns, transports, and all places likely to be occupied by troops in peace and war, epidemiology and management of epidemics.

3. (*a*) The medical history of the more important campaigns, and the lessons to be learnt therefrom.

(*b*) A knowledge of the Army Medical Services of the more important Powers.

(*c*) The laws and customs of war, so far as they relate to the sick and wounded.

4. Military law, as applicable to other officers of the Territorial Army.

In drawing up the above programme of examinations, it could not have entered into the heads of the Army Council that the men who have to pass in these subjects are senior men in large practices, with very little time for outside reading, and with the best will in the world few can afford to give the amount of time necessary to fit them up for examination. Take subject 3 (*a*), there alone is an enormous amount of reading, the medical history of the South African war is 400 pages, etc., what good can 3 (*a*) and 3 (*b*) do when a Territorial officer has passed in them? 1, 2 and 3 (*c*) are all right, and if they had kept to them no one could object. Numbers 1 and 4 are subjects already passed for a Major's examination; why pull them in again?

I am writing this not to grumble, but to get the opinion of some more of the senior men of the R.A.M.C.(T.). No one could object to having all the officers as efficient as possible, but the authorities should consider that we have our livelihood to get outside the R.A.M.C.(T.) and are not allowed study time off. The only outcome I can see is that they will lose good men to the service who are willing to serve but have not the time to give for such stringent examinations.

THE ARMY ESTIMATES.

MR. HALDANE'S MEMORANDUM.

THE Secretary of State for War has issued the usual memorandum on the army estimates. The total for 1909–10 is estimated at £27,435,000, a decrease of £24,000 as compared with 1908–9, a result dependent upon considerable variations in both directions, the chief items of increased expenditure being the vote for the growth of the Territorial Force, which amounts to £355,000.

Recruiting for the regular army has been remarkably brisk, and at the present time fully-trained men are available to mobilize and maintain in the field for six months the cavalry division, complete with its due proportion of other arms, and the infantry of six divisions. The other fighting units of the six divisions can also be completed on mobilization, but there are still deficiencies in two divisions in the Army Service Corps and the partially-trained men required for medical units, and in the artillerymen required for ammunition columns and to supply the waste of war. The machinery for completing all these deficiencies has been organized and is at work.

Loss by Disease.

Under this head Mr. Haldane says:

"The time has come when we may gauge the results on the health of the army of the reforms in the Royal Army Medical Corps which were instituted in 1902. We are sufficiently removed from the disturbing influences of the South African war upon the normal statistics to be able to contrast the wastage from deaths and invaliding at the present day with that of the period preceding the war."

He gives a comparison of the hospital admission rates,

death-rates, rates of invaliding and constantly sick, rates of the first and last years of the decennial period 1898–1907 in India, in the United Kingdom, and in the Colonies, but we replace these by detailed statistics for each year from 1888 to 1907:

UNITED KINGDOM.

Average Strength for Period (1888–1907), 104,929.

Ratio per 1,000 of strength.

Years.	Admitted into Hospital.	Died.	Discharged as Invalids.	Constantly Non-effective from Sickness.
1888	740.9	5.52	15.91	44.45
1889	730.4	4.57	15.89	41.48
1890	810.6	5.53	16.72	44.29
1891	772.2	4.94	14.51	41.66
1892	761.3	4.38	14.38	42.75
1893	751.6	5.13	15.70	44.10
1894	655.9	3.70	17.06	40.91
1895	702.8	4.32	16.57	41.76
1896	645.1	3.58	21.20	38.52
1897	640.6	3.42	19.87	37.95
1898	649.6	3.59	17.99	37.84
1899	670.6	4.30	18.12	36.93
1900	655.1	6.62	32.85	34.34
1901	747.1	4.71	42.26	43.60
1902	711.2	4.18	36.69	41.65
1903	586.9	3.41	21.83	35.23
1904	506.7	2.96	21.59	29.26
1905	448.8	2.73	18.22	26.39
1906	446.7	2.92	14.40	24.86
1907	438.0	3.14	14.22	24.64

INDIA.

Average Strength for Period (1888–1907), 67,406.

Ratio per 1,000 of strength.

Years.	Admitted into Hospital.	Died.	Sent Home as Invalids.	Discharged as Invalids.	Constantly Non-effective from Sickness.
1888	1,385.7	15.20	22.85	12.43	72.34
1889	1,504.4	17.12	26.08	13.33	87.36
1890	1,517.1	14.45	25.42	16.99	86.96
1891	1,387.3	16.35	27.09	15.50	80.22
1892	1,514.7	17.59	24.41	12.40	83.88
1893	1,416.8	13.15	25.32	10.51	86.60
1894	1,506.9	16.81	25.37	15.17	91.71
1895	1,460.0	14.31	24.34	12.01	93.61
1896	1,386.7	15.29	27.89	12.48	93.85
1897	1,500.4	19.25	34.99	20.16	101.38
1898	1,454.0	20.31	39.45	19.94	90.75
1899	1,148.7	13.25	31.57	14.30	73.00
1900	1,143.2	15.36	33.46	11.18	71.71
1901	1,104.3	13.12	39.28	8.60	65.90
1902	1,078.4	15.36	37.23	13.56	66.00
1903	1,035.5	13.33	29.62	13.06	63.17
1904	897.0	11.28	35.59	17.20	57.14
1905	833.6	10.38	21.21	12.30	52.41
1906	871.0	10.81	28.37	9.39	51.47
1907	756.4	8.38	25.47	8.84	46.38

COLONIES.

Average Strength for Period (1888–1907), 36,516.

Ratio per 1,000 of strength.

Years.	Admitted into Hospital.	Died.	Sent Home as Invalids.	Discharged as Invalids.	Constantly Non-effective from Sickness.
1888	785.6	8.46	19.50	10.78	47.40
1889	762.3	6.94	23.42	11.86	48.04
1890	801.7	8.49	22.60	14.79	48.04
1891	778.1	7.33	20.86	13.65	48.67
1892	827.7	8.15	20.90	11.25	50.28
1893	923.4	8.15	21.57	11.58	57.03
1894	838.2	7.01	16.34	9.27	55.25
1895	894.2	7.73	17.00	10.29	57.72
1896	880.3	7.23	18.22	8.29	56.71
1897*	904.2	7.99	21.34	10.45	57.11
1898*	1,000.3	13.63	44.83	11.67	60.49
1899	846.8	7.91	29.20	12.68	50.66
1900	814.3	7.07	23.80	9.02	46.44
1901	801.0	9.77	47.10	12.99	48.35
1902	549.0	7.03	36.80	5.88	35.47
1903	740.0	8.47	33.04	19.45	51.24
1904	6'0.4	7.50	24.94	14.69	40.85
1905	565.1	6.21	27.57	10.72	36.26
1906	505.9	4.56	21.76	8.90	32.92
1907	502.3	5.16	19.83	9.01	32.77

* These years were affected by the Soudan campaign.

In commenting on the statistics, Mr. Haldane says:

"It should be mentioned that the fall in the admission and constantly sick rates is not to be attributed wholly to diminished incidence of disease. It is partly due to an administrative improvement by which men with slight ailments are not removed to hospital, but are treated in barracks as out-patients. But the lowered death and invaliding rates show the true effects of efforts at disease prevention. The same results are shown, for specific diseases, in the curves published in the Army Medical Department Report for 1907-8.

"And this improvement is not only welcome as indicating increased well-being for the soldier; it also means reduction in the number of hospital beds necessary, less men maintained in peace to produce a given number fit for war, smaller annual drafts to be sent out by the home units; in fact, an all-round saving in the cost of the army."

The Territorial Force.

The Yeomanry and Volunteers on March 31st, 1908, numbered 9,174 officers and 241,085 men; the Territorial Force came into being on April 1st, 1908, and on December 31st, 1908, its strength was 8,623 officers and 199,059 men. Mr. Haldane states that since the work of administration has been handed to the county associations on April 1st, 1908, one of the largest questions engaging their attention has been

the provision of drill hall and other accommodation for the Force. This necessitated a large amount of new construction, and in many cases the adaptation or repair of what was already in existence. A number of new drill halls and head quarters have been approved, and in several cases riding schools for the use of the mounted branches have been sanctioned. Good progress is being made with this work, though it will take some time to complete.

The equipment of the force up to the standard required for training is being pushed forward, and it is intended that the necessary equipment shall be available for all units next training season.

There is every indication that the Territorial Force is making substantial and satisfactory headway in the country. Thanks chiefly to the efforts of the associations, it is receiving support from many who have not hitherto identified themselves with the military forces of the Crown. In particular, many large employers of labour, both public and private, are granting their employés the most generous facilities for attending camp. A general interest in the force has been awakened throughout the country; a considerable number of men whom the old volunteer organization does not appear to have reached are coming forward, recruiting is particularly brisk in consequence, and the class of men presenting themselves for attestation is exceptionally good.

Pay, etc.

The estimate for expenses of pay, etc., of the medical establishments and of medicines is £440,000; this is a net

decrease of £11,000, and as to this the estimates contain the following observations:

The return of medical officers and nurses from South Africa on reduction of the garrison enables the numbers of re-employed retired officers and civil nurses to be reduced. There is also less provision for civil practitioners, owing to the increased number of officers of the R.A.M.C. available for duty.

ARMY MEDICAL CORPS (TERRITORIAL FORCE), ABERDEEN.

Head Quarters.—No definite decision has yet been reached as to where the permanent head quarters of the Royal Army Medical Corps and allied branches of the Territorial Force in the City of Aberdeen are to be, and it seems very doubtful whether the old West Poorhouse in Fonthill Road, which is at present being utilized as head quarters, will be purchased by the War Office as was expected and as is desired by the City Association. Since the R.A.M.C. has occupied these premises they have been found in every way suitable, being both commodious and central, and there is little doubt that those factors have counted very materially in the recruiting. Some few weeks ago the Chief Engineer for Scotland accompanied by the local officials of the City of Aberdeen Territorial Force Association, went over the premises, and also inspected the at present unused barracks in King Street. The old Poorhouse, although considered in every respect suitable for head quarters, was looked upon with disfavour on account of the cost involved in purchasing the building, and as there is still about twenty years of the lease of the King Street barracks to run, it has been suggested that these be permanent head quarters. This is viewed with much disapproval by the corps, not only because the place is in a bad state of repair, but also on account of its being so much out of the way for the great majority of the men. There can be no doubt that if the War Office eventually determines to make the barracks the head quarters of the R.A.M.C. this will have a very prejudicial effect on the strength and prosperity of the corps. Hopes are, however, still entertained that the representations of the association in regard to the purchase of the old Poorhouse may be favourably considered.

Recruiting.—Meanwhile the recruiting for the corps goes on very steadily and a good class of recruit is being obtained. For Nos. 1 and 2 Highland Division Field Ambulances and the General Hospital over 400 men have now been enrolled. The nursing staff of the General Hospital was complete some months ago—the first in the kingdom to attain this satisfactory position. The organization of the training school was completed many months ago, but as no funds are yet available for it little has been accomplished in the way of practical work. With suitable head quarters permanently agreed on there is no doubt that the corps would rapidly follow the Highland Division Artillery in completing its establishment.

Universities and Colleges.

UNIVERSITY OF LONDON.

FACULTY OF MEDICINE.

Proposed Formation of a Board of the Faculty.

THE Faculty of Medicine of the University of London, at its meeting this (Friday) afternoon, will have before it a memorandum by Professor Starling suggesting the formation of a Board of the Faculty, and draft recommendations and a draft resolution for the formation of such a board prepared by Professor Starling and Mr. Leonard Hill.

Professor Starling's Memorandum.

The main object of the reconstitution of the university in 1898 was to make the university a teaching body by giving the teachers a voice and an influence in the determination of the curricula and in the examinations. In the statutes of 1900 the method adopted to attain this object was the institution of boards of studies composed of teachers, whom the Senate were bound to consult on all subjects concerning the curricula and examinations. The recommendations of these bodies are considered by the Senate only after receiving a report on them from the Academic Council or External Council according as the recommendations affect internal or external students respectively.

To the Faculties the only statutory power accorded is the election of sixteen members of the Senate—members who also form part of the Academic Council. On the Academic Council there falls the task of co-ordinating the recommendations of the various boards within the purview of each Faculty, and of formulating definite recommendations to the Senate with regard to the Faculty as a whole. Since the Academic Council includes representatives from all Faculties, it has become customary for the affairs of each Faculty to be referred first to a subcommittee consisting of the representatives of the Faculty in question. The initiation of action in the internal affairs of the university so far as concerns medicine is therefore practically in the hands of the three representatives of the Faculty. These three are not trained administrators. They are not cognizant with all aspects of questions which arise concerning the Faculty of Medicine. They only form a small minority in the Academic Council. Where there is general agreement between all the Boards of Studies they are able to advise the Academic Council accordingly. Where there is disagreement they have not the knowledge or power which would enable them to decide between the divergent views, nor, if they so decided, could they speak with the authority necessary to impress their views on the rest of the Academic Council or on the Senate. Moreover, their time and energies are so fully taken up with routine business, such as modifications in the curricula, recognition of teachers, course of study, etc., that no time or energy is left for the working out of schemes for the development of the University Faculty of Medicine, which have from time to time been put forward by the Faculty or the Boards. One of the weaknesses of the internal side of the University is the inadequacy of the Academic Council to perform duties which cannot possibly be carried out by any one body of men.

Is it possible to improve this condition of things? Any alteration in the mode of appointment of the Boards of Studies, or of the Academic Council, or in the reference to these bodies, would amount to an alteration of the schedule to the Act of 1898, which at present keeps the whole university in fetters. We cannot, therefore, expect any such alteration until the new Royal Commission has reported. It would, however, be possible to effect certain changes *by consent* (not by statute) which might bring about an improvement in the administration of the internal side of the university, and might be regarded as an experimental trial of a condition of things for which statutory authorization might be hoped for under a new Act.

We cannot expect the medical side of the university to make any substantial progress until its academic direction is determined by those who are mainly responsible for its welfare—namely, the members of the Faculty of Medicine. At the present time the Faculty itself is too large and unwieldy a body to undertake administrative functions. Any attempt to rule the medical side of the university by a direct vote of the Faculty would result in important questions being decided by small groups of men who had the energy or leisure to whip up the holders of some particular view. On the other hand, its three representatives on the Academic Council are too few in number and not sufficiently representative of the varied interests involved to be able to carry on the work which is laid upon them.

The solution of the difficulty is probably to be found by adopting the suggestion of the Cowper Commission, and by entrusting the affairs of the Faculty to a "Faculty Board," to be elected by the Faculty, sufficiently numerous to include representatives of the various branches of study involved in the medical discipline but not too large to act as a single advisory or executive body. It is to be hoped that such a body will in future be entrusted with actual executive functions in certain academic matters. At the present time all that the Faculty can do is to delegate its powers of advice to its representative board, and to request the Senate to regard its delegates as the Faculty itself and as the chief advisory body in medicine. The Faculty Board would thus in practice take the place of the subcommittee in medicine of the Academic Council, and would probably also render unnecessary the existence of the committee of the medical members of the Senate.

Method of Appointment.—At some future time, when the Faculties have more autonomy and are directed by their representative boards, the nomination of Boards of Studies, which might be practically committees of the several Faculties, would lie with the latter. At present the Boards of Studies are the most important academic bodies provided for by statute. The Faculty Board would therefore have to be, in the first place, representative of the various Boards of Studies in the Faculty, care being taken by the proper proportioning of the numbers of representatives from each board, and by the addition of members directly elected by the Faculty to ensure that the opinion of the Faculty Board should really represent the opinion of the Faculty as a whole. A board of twenty-four to thirty would be workable in size, and might have somewhat the following constitution:

One representative of each of the subjects, Chemistry, Physics, Biology, Pharmacology, Ophthalmology, Hygiene, Mental Diseases, Dentistry = 8.
Two representatives of each of the subjects, Anatomy, Physiology, Pathology, Gynaecology = 8.
Five representatives each of Medicine and Surgery = 10.

This would give eight members of the board representing the Preliminary and Intermediate Medical Studies and eighteen representatives of the Advanced Studies. In a

body of this size it should be possible to secure representation on the board of every school of the university. The board would have to meet regularly at least once a month in order to get through the business, and it would therefore be essential to elect only such men as are able to devote this amount of time to the work of the Faculty.

The following series of resolutions are designed for the purpose of carrying these alterations into effect. It is important to remember that the Faculty, in carrying these or similar resolutions and making a bid for Home Rule in the Faculty, would be practically requesting the Academic Council to abrogate certain of its powers in favour of a board which is not recognized by the present statutes. The change, therefore, can only be carried out by consent of the Senate and its Councils, and if the recommendations of the Faculty are to have sufficient weight with the Senate to persuade this body of their advisability, it is essential that they should be carried by a large majority at a full meeting of the Faculty, and not, as usually happens, by a chance majority at a meeting which only just exceeds the necessary quorum. The question is vital for the future of the Medical School of London, and is much more important than the election of one or other individual as a representative on the Senate. It is hoped, therefore, that the members of the Faculty will make a special effort to attend the meeting at which these resolutions will be brought forward.

Draft Scheme Proposed by Professor Starling and Mr. Leonard Hill.

The scheme recommends that the Board of the Faculty of Medicine shall consist of:

(i) The Dean of the Faculty of Medicine, who shall be *ex officio* Chairman of the Board.
(ii) The Secretary of the Faculty of Medicine, who shall be *ex officio* Secretary of the Board.
(iii) The Chairmen of the Boards of Studies in the following subjects:

Preliminary Medical Studies.
Intermediate Medical Studies.
Advanced Medical Studies.
Dentistry.
Hygiene and Public Health.
Physiology and Experimental Psychology.
Human Anatomy and Morphology.

(iv) Representatives of the following boards appointed by the Faculty after report from the Board in question, namely:

Two representatives of the Board of Preliminary Studies.
Two representatives of the Board of Intermediate Medical Studies.
Four representatives of the Board of Advanced Medical Studies.

(v) Four members to be elected from the Faculty by the Faculty.
(vi) The three Representatives of the Faculty of Medicine on the Senate.
(vii) The two members of the Senate appointed by Convocation on the election of the registered graduates in Medicine and in Surgery.
(viii) All members of the Faculty of Medicine not included in the foregoing categories who are also members of the Senate.

The Board will thus consist of at least twenty-six members, and it is proposed to fix its quorum at ten.

It is recommended that the Board of the Faculty of Medicine be empowered to report to the Senate on any subject within the purview of the Faculty through the Academic Council, or through the Council for External Students, as the case may be, provided that, if any six members of the board, at any meeting of the board, request that a question shall be reserved for the consideration of the Faculty as a whole, no action shall be taken thereon until the Faculty has considered it.

Resolution.

The following is the text of the resolution which is to be proposed by Professor Starling, seconded by Mr. Leonard Hill:

That the Senate be requested to resolve that until further order no action on any of the following subjects be taken by the Senate until they shall have received a report thereon from the board of the Faculty of Medicine through the appropriate council or councils in accordance with the scheme set out below:

Subject.	*Appropriate Council.*
(*a*) Recognition of teachers and courses of instruction in medical subjects	Academic Council.
(*b*) Medical curriculum	Academic Council and External Council.
(*c*) Medical examinations, including appointment of Examiners ...	Ditto.
(*d*) Admission of schools in the Faculty of Medicine	Academic Council.
(*e*) Constitution of the Faculty of Medicine	Ditto.
(*f*) Organization of higher teaching and research in medicine	Ditto.

UNIVERSITY OF CAMBRIDGE.

THE date of the Third M.B., Part II, in next Easter term, has been altered from Tuesday, June 15th, to Tuesday, June 8th, owing to the Darwin celebration.

R. C. Pannett, M.A., Gonville and Caius College, has been appointed Superintendent of the Zoology Museum.

Sir Victor Horsley will deliver the Linacre Lecture at St. John's College on May 6th, the subject of the lecture being the Motor Area of the Brain.

The following degree was conferred on February 25th:

M.B., B.C.—F. A. Julen, Trin.

UNIVERSITY OF ABERDEEN.

HONORARY GRADUATES.

AT a meeting of the Senatus of Aberdeen University held on February 23rd it was agreed to confer the following honorary degrees at the April graduation:

The Degree of Doctor of Divinity.—Rev. David S. Cairns, M.A.Edin., Professor of Dogmatics and Apologetics, United Free Church College, Aberdeen; Rev. James Riddoch Leslie, M.A.Aberd., Principal of the Episcopal Training College, Edinburgh; Rev. John Scott Lidgett, M.A.Lond., Warden of Bermondsey Settlement, London.

The Degree of Doctor of Laws.—Allan Rannie Andrew, M.A.Aberd., Chief Inspector of Schools, Hamilton; Alexander Bruce, M.A.Aberd., M.D.Edin., Edinburgh; Donald Crawford, K.C., Sheriff of Aberdeen, Kincardine and Banff; Frederic Harrison, Philosophical Writer, London; James Pittendrigh MacGillivray, R.S.A., Sculptor, Edinburgh; Paul Sabatier, French Author.

Dr. Alexander Bruce had a brilliant career as a student at Aberdeen University. He was first Bursar in Arts in 1870, and graduated in 1874 with first-class honours in classics, and gained the Simpson Greek prize, the Seafield gold medal in Latin, and the Town Council gold medal as the best student of his year. He studied medicine in Edinburgh, and graduated in 1879 M.B. and C.M. with first-class honours, gaining the Grierson and Tyndal Bruce bursary and the Ettles and Leckie Mactair scholarship. Later he took his M.D. degree, gaining the gold medal for his thesis. For many years he was Lecturer in Pathology in the Edinburgh Medical School, and held the post of Pathologist in the Edinburgh Royal Infirmary and in the Royal Hospital for Children. He is now Lecturer on Practice of Medicine and Physician to the Royal Infirmary, Edinburgh.

UNIVERSITY OF BRUSSELS.

THE following candidates were successful at the last examination for the degree of Doctor of Medicine:

Dr. B. J. Macaulay, Eastbourne; Dr. H. F. Briggs, Eastbourne; Dr. A. R. Rendle, Harrow; Dr. J. J. Bradley, Colonial Medical Officer, Seychelles.

TRINITY COLLEGE, DUBLIN.

FINAL EXAMINATION IN MEDICINE (PART I).

THE following candidates passed this examination in Hilary Term:

*J. H. Woodroffe, *M. A. Diemont, *Hilgard Müller, A. K. Henry, A. C. Hallowes, Beatrice M. Hamilton, C. H. Denham, R. H. Mathews, P. G. Leeman, J. W. Flood, J. B. Burgess.
* Passed on high marks.

SOCIETY OF APOTHECARIES OF LONDON.

Gillson Scholarship in Pathology for 1909.—This scholarship has been awarded to Mr. P. N. Paton, M.A., M.B., C.M.Camb., M.R.C.S., L.R.C.P.Lond., of Cambridge University and St. Thomas's Hospital.

The following candidates passed in February in the subjects indicated:

SURGERY.—W. C. D'Eath, Charing Cross.
MEDICINE.—N. B. Benjafield (Sections I and II), University College Hospital; J. Bramley-Moore (Section I), University College Hospital; J. H. Clarke (Sections I and II), St. Mary's.
MIDWIFERY.—J. H. Clarke, St. Mary's; M. Graves, London; H. V. Humphry, Westminster.

Medico-Legal.

ACTION FOR ALLEGED NEGLIGENCE.

IN the Aberdeen Sheriff Court evidence was led last week in an action at the instance of the husband of a patient of Dr. J. A. Mearns and Dr. W. J. Bryce for £125 as damages from each of the defenders for alleged negligence in treating the pursuer during her confinement in February, 1908. She alleged that she was severely scalded by the use of hot water approaching boiling point. The allegations were denied.

In deciding the case, Sheriff Begg finds that the pursuer has failed to prove any fault or negligence on the part of the defenders, and he assoilzies them with expenses, finding, however, that no higher charges are to be allowed than would have been incurred if the defenders had lodged joint defences, and been represented by the same law agent. The sheriff remarked that this was a most painful case to decide, on account of the mutual aspersions of the parties. On the one hand, he did not think there was any ground for accusing the pursuer of shamming or malingering. On the other hand, he could hardly understand how she suffered so severely from the application of water not hot enough to scald the two doctors' hands, or how the

discoloration of the skin observed by Professor Stephenson developed into the raised scar tissue, upon which Dr. Wallace Milne required to operate. Various suggestions had been made to meet the difficulties, but none could be regarded as proved. In the absence of any proof of fault or negligence on the part of the defenders, he must regard the pursuer's scald as the result of accident, whether due to the abnormal sensitiveness of the skin of the pursuer, to the midwife allowing the sheet saturated with hot water to remain in contact with the skin, or to some unascertained circumstance. Even in hospitals, where patients had the advantage of the highest skill and the most scientific appliances, slight blisters had been known to result from the hot water treatment of haemorrhage. He sympathized with the pursuer, but doubted whether she would have raised this action if she had known that in all probability the defenders saved her life by promptly applying the only available remedy while she was under chloroform. If desperate diseases called for desperate remedies, a doctor might be pardoned for taking the risk of the water being rather too hot for the patient's skin instead of allowing the patient to bleed to death. It was common ground between the parties that this particular part could stand much greater heat than the external skin. As regards their subsequent treatment of the case, the defenders seemed to him to have fully done their duty. Dr. Byres, having been called to assist, was quite entitled to leave the patient to the care of Dr. Mearns. As regards the latter gentleman, he could not hold that he was bound personally to dress the pursuer's sore, considering that the nurse was quite fit to do so.

It may be gathered from the foregoing account that this was a case of uterine haemorrhage treated by the application of hot water; it shows how medical men may be worried by actions for damages, and, though they gain a verdict in their favour, are saddled with a bill for heavy costs.

WORKMEN'S COMPENSATION.

Alleged Psychical Paraplegia.

Before the Hon. the Recorder of Dublin, John Delany, a labourer, claimed an award against Messrs. Richardson and Fletcher, manure manufacturers, for injuries sustained to his spine and back while engaged loading manure in barrows in the defendant's premises.

The Recorder had the assistance of Sir Charles Ball as medical assessor.

John Delany, who moved about the court with the aid of crutches, stated he had been for eight months in the employ of this firm, and up to the time of the accident in question he had never had an hour's sickness in his life. The circumstances of the accident were that a heap of manure, 7 ft. or 8 ft. high, fell upon him, and he was struck unconscious. He was treated in Sir Patrick Dun's Hospital, the Meath Hospital, and the South Union Hospital, but was still absolutely disabled.

Dr. M'Namara, called for the applicant, stated that Delany was suffering from injury to the spine, and was not able to work.

Dr. Charles Preston Ball, called for the respondents, stated that the applicant was well able to work, but imagined that he could not.

Dr. Parsons, who had examined the applicant on two occasions, stated that the man was suffering from no organic disease, and had not sustained any serious injury to his spinal column, such as fracture or dislocation. In cross-examination, asked how he could account for the man's allegation that he could not walk, Dr. Parsons said he could not do so except to this extent: it had got into Delany's mind that his back was injured, and as a result of this fixed idea in his mind he could not move his legs. It being put to Dr. Parsons that the man had come uncured out of Sir Patrick Dun's, Meath, and South Dublin hospitals, witness replied that it was very difficult to persuade a man he had the capacity to walk, particularly when an action in court was pending.

Sir Charles Ball, the medical assessor, then saw the applicant in his Lordship's chamber, and upon returning, communicated his views to the Recorder, who stated that Sir Charles agreed with Dr. Parsons. He did not think this man was malingering, but that he was in a nervous and hypochondriacal condition, and that he was not fit to work at present.

The Recorder said there was an important question involved as to how far an accident could be held to be accountable for the man's mental condition as distinguished from physical injuries. He suggested, however, that some agreement should be arrived at between the parties.

On the consent of both sides the Recorder made an interim order for the payment of an allowance to the applicant, and adjourned the case till next session to see how he would go on. The Recorder commented on the enormous advantage of the aid of an assessor in those particular cases.

FEES TO MEDICAL WITNESSES FOR GIVING EVIDENCE AT INQUESTS IN WORKHOUSES IN IRELAND.

Dr. T. Laffan (Cashel) writes with reference to this matter to say that he has received fees for giving evidence at inquests or making *post-mortem* examinations on patients who have died in workhouses. He considers that the law on the point is well ascertained.

MEDICAL FEES AT INQUESTS.

H. G., F.R.C.S., inquires whether a medical man is not entitled to receive an extra guinea for attending an adjourned inquest.

*** The coroner is only empowered to pay one guinea for evidence and one guinea for *post-mortem* examination, including adjournments. This is the highest fee that he can allow by statute law. But occasionally, when a special analysis is required, extra remuneration is obtainable from the Home Office or the county council.

THE MEDICAL WITNESS AT AN INQUEST.

Tibia writes as follows: Is it usual or proper for a medical coroner, who is also engaged in private practice, to systematically employ his partner to make *post-mortem* examinations and give evidence in his court, to the exclusion of other practitioners?

*** We think the coroner should summon to give evidence at the inquest the medical man who last attended the deceased or was called in at the time of death, and this is the usual practice. The coroner who systematically employs his partner, to the exclusion of another practitioner, can hardly be said to be exercising the duties of his office with dignity and discretion.

SHARE OF A PRACTICE.

Partner asks what would be a reasonable sum to pay for the third share of a practice, established fourteen years, bringing in £1,500 per annum, and what would be a reasonable time to wait before being admitted to a further share?

*** From the data it would be impossible to form any reliable opinion as to the actual value of this practice. Speaking generally, such a share would probably be worth from a year and a half to two years' purchase. With regard to a further share, this should be settled at the time of the purchase, and by mutual agreement. It is impossible to say on the data what would be a reasonable time to wait.

CORONER AND MEDICAL PRACTITIONER.

H. C. S. writes us a long letter in which he complains that, although called by a police constable to view a dead man with the head on one side of the railway line and separated entirely from the rest of the body, he was not summoned by the coroner to give evidence at the inquest; and further he asks who is responsible to him for the payment of his fee when called by the police to see the body? It appears that our correspondent did attend the public inquiry and the coroner explained to him that it was optional on his part as to whether he called a medical man or not, but the jury had the power to do so if they wished for further medical evidence as to the cause of death. The jury in the present case did not require medical evidence and returned an open verdict, which our correspondent believes would have been one of suicide had he been requested to give evidence. He received no fee at the court, and after a passage of arms between the coroner and himself, he left much dissatisfied with the proceedings. We sympathize with H. C. S. in the matter, and we think that the inquest would have been more satisfactory if further evidence had been taken than that given by a constable only. The position of the deceased's hat and stick, and other things, observed by the medical man called, indicated that the act was contemplated; and he says that if he had given evidence probably a more correct verdict would have been obtained. But he was neither summoned to attend, or permitted to give evidence at the court. For services rendered at the time he was called by the constable to see the deceased a claim should be made to the Chief of the County Constabulary, or he might be remunerated by the railway company or by the relatives of the deceased. A coroner has no power to issue payment to a medical man except for giving sworn evidence at an inquest or for making a *post-mortem* examination.

BOOK DEBTS.

S. R. P., who has bought a practice without buying the book debts, wishes to know if he must hand over to his predecessor money paid by patients for his work done since he has been by himself, because he finds in the ledger that they owe his predecessor an account. Should confinement fees be handed over also?

*** The purchaser of a practice can, of course, refuse to collect his predecessor's professional accounts; and in that case the vendor would have to take steps to realize them at once, if necessary by suing. As this usually would do damage to a practice, it is customary for the purchaser to consent to collect them in the ordinary way by sending in accounts periodically with any fresh items added thereto. Under such circumstances it is only just that when part payment is made the amount received should be used to cancel the earlier part of the account rather than the later. With regard to confinement fees it is another matter; they are special fees paid at the time for work done, and would belong to the purchaser.

RECEIPT STAMP.

WITH reference to an answer given in the JOURNAL of February 13th, 1909, p. 443, "R. R. R." writes: Your reply *re* receipt stamp is wrong. Both the name (or initials) and the date must be written across the stamp. Also the payment of an account without the stamp being so written over can be obtained again. You might note this in the BRITISH MEDICAL JOURNAL.

*** Our correspondent is really a little too positive. Section 8 of the Stamp Act, 1891, indicates the method referred to as a proper and sufficient method of cancelling a receipt stamp, but it is not the only method authorized. For his benefit we quote Subsection 1 in full, the italics being our own:

"An instrument, the duty upon which is required or permitted by law to be denoted by an adhesive stamp, is not to be deemed duly stamped with an adhesive stamp, unless the person required by law to cancel the adhesive stamp cancels the same by writing on or across the stamp his name or initials, or the name or initials of his firm, together with the true date of his so writing, *or otherwise effectively cancels the stamp and renders the same incapable of being used for any other instrument, or for any postal purpose, or unless it is otherwise proved that the stamp appearing on the instrument was affixed thereto at the proper time.*"

Our correspondent's statement that if a person fail to stamp a receipt or to initial the stamp he can recover the money which has already been paid to him is also incorrect, for the reason given in our previous answer. The question is entirely one of evidence, and a document not duly stamped would not be admissible as evidence of payment. Other evidence might, however, be admitted, and payment proved without the production of the receipt being necessary.

Medico-Ethical.

The advice given in this column for the assistance of members is based on medico-ethical principles generally recognized by the profession, but must not be taken as representing direct findings of the Central Ethical Committee.

RELATIONS WITH AN UNREGISTERED DENTIST.

X. writes that opposite his house lives an unregistered dentist, who recently sent him a patient whose jaw had been dislocated. He reduced the dislocation and claimed his fee, but the patient demurred and said that the dentist said X. would not charge anything. X. therefore let him off the fee. He wishes to know whether he was covering an unqualified practitioner.

*** We do not see on what ground X. excused the patient a fee if he was able to pay one. Whether the dentist was registered or not would make no difference in X.'s obligation to render aid to the patient or his right to be paid for it. By not charging a fee he has laid himself open to the suspicion of occupying some special relation to the dentist, and we advise him to let the dentist know that he must not look to him in future for any assistance in his practice.

RELATIONS WITH UNQUALIFIED DENTISTS.

J. F. R. writes: I have been asked by an unqualified man practising dentistry to report upon a former patient of his upon whom he has operated who is now sueing him for damages. He asks whether he would be justified in seeing this patient, and giving evidence in court on behalf of the unregistered dentist?

*** While the position of an expert witness giving evidence on behalf of an unregistered practitioner is not a desirable one, it does not seem to involve a violation of the resolution passed by the General Medical Council on December 1st, 1898.

SCHOOL DOCTORS AND THE HEALTH OF SCHOOL TEACHERS

HON. SEC., F. DIVISION.—(1) The duties of a school medical officer are prescribed by individual education authorities, but we do not know of any authority which has included in the duties of the office the examination of members of the teaching staff. (2) A school medical officer, whether whole-time or part-time, unless requested to do so by the teacher himself, should not examine a teacher without communicating with that teacher's doctor. An obvious exception would be in the case of suspected infectious disease, but even then after making a diagnosis the teacher's doctor should be written to by the school medical officer.

Letters, Notes, and Answers.

BRITISH MEDICAL ASSOCIATION AND BRITISH MEDICAL JOURNAL

THE offices of the British Medical Association and of the BRITISH MEDICAL JOURNAL are at 429, Strand, London.

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Attiology, London.* The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London.*

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL, and not at his private house.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

☞ **We would request correspondents who desire to ask questions in this column not to make use of such signatures as "A Member," "A Member B.M.A.," "Enquirer," and so on. By attention to this request much confusion would be avoided. Correspondents are asked to write upon one side of the paper only.**

F. M. would be much obliged for any information regarding the climate of San Luis Potosi, Mexico.

COST OF PETROL FOR MEDICAL MOTORING.

BOLTONIAN writes: The cost of petrol generally is assumed to be about ½d. per mile, or, say, about 20 miles to the gallon, 1s. I should like the opinion of medical men if their running does not cost them more, as though not covering more than between 10 to 20 miles, taking three to four or more hours, the continual starting and stopping may make a difference.

HOSPITAL FLOORS.

B. G. M. writes from India: The new hospital here has been floored with marble slabs each about 18 in. square. Unfortunately the work has been badly done, and the joints between the slabs are open in many cases. The opening extends to the whole thickness of the slabs. The joints are wide enough to take the thin blade of a penknife. Would any of your readers kindly give me advice as to what should be done to fill up these openings in a way suitable for the requirements of a hospital floor? The best I can think of is plaster of Paris; but it is porous.

ANSWERS.

NEW ZEALANDER.—A New Zealand student, who has attended the University courses in Biology, Physics, and Chemistry (Inorganic and Organic), and has passed the examination for the degree of M.B. of the University in those subjects, is exempted from the equivalent examination for the diplomas of L.R.C.P. and M.R.C.S. Such a student, however, is not exempted from the Second Examination in Anatomy and Physiology for the diplomas of L.R.C.P. and M.R.C.S., unless he has passed the Final Examination for the degree of M.B. and has obtained that degree.

"BANDI'S LYMPH."

X. Y. Z.—Dr. Bandi, an Italian bacteriologist, has taken an active part in the vaccine campaign against various diseases, but, as far as we have been able to ascertain, he has not introduced any serum. His name is, however, associated with a plague vaccine, which, in conjunction with Dr. Terni, he described in the *Deut. med. Woch.*, January 19th, 1900, p. 463. This vaccine differs from Haffkine's method by precautions being taken to increase the virulence of the bacilli, and by taking the exudation from the peritoneal cavity of infected guinea-pigs and rabbits just before or just after death, and incubating this fluid for some time before sterilizing it by the fractional method. Priority was claimed by Dr. Bandi for the plague idea, when Hueppe and another worker dealt with this subject in 1907, and did not mention his name. He has also done work in connexion with diphtheria.

A CASE FOR DIAGNOSIS.

DR. H. J. THORP (Ipswich) writes: In reply to "B. S." in the JOURNAL of February 27th, I would suggest the patient taking a minute dose, $\frac{1}{10}$ grain, of calomel three times a day. The patient must submit to a strict régime of diet and exercise.

TREATMENT OF BRONCHIAL ASTHMA.

DR. F. P. BARTLETT (Ottery St. Mary) writes: "A Medical Man" should try for his bronchial asthma Parke Davis 2-grain capsules of desiccated suprarenal gland. One taken three times a day and continued for some months.

LETTERS, NOTES, ETC.

THERMOMETER CASE.

MR. G. H. ZEAL (82, Turnmill Street, E.C.) has sent us a patent thermometer case with a clip to attach to the pocket, like the clip commonly used for carrying certain forms of fountain pen. The use of such a case may prevent some accidents.

THE SERUM DIAGNOSIS OF SYPHILIS.

DR. HARRY CAMPBELL (London) writes: It has been pointed out to me that in my letter published in the BRITISH MEDICAL JOURNAL of February 27th, p. 567, the phrase "the corpuscles are allowed to sink" is ambiguous. I ought to have said that "the blood is allowed to clot," and the supernatant serum drawn off.

TROPACOCAINE AS A SUBSTITUTE FOR COCAINE.

DR. GORDON SHARP (Leeds) writes: Some time ago the Pharmacopoeia Committee suggested the need for a substance having like properties to, but possessing less toxicity than, cocaine. It may be found that tropacocaine will answer the requirements, for present experience points to its being much less dangerous in use. It has one great advantage, in that it is not a proprietary preparation, for it is found in coca leaves. Chemically it is a derivative of pseudotropine, and when hydrolyzed by boiling with a mineral acid it yields pseudotropine and benzoic acid. The commonest salt is the hydrochloride, and solutions can be boiled without undergoing decomposition. Cocaine, it may be remembered, is a derivative of ecgonine, and when treated with baryta water it is split up into ecgonine and benzoic acid. It has the disadvantage of being decomposed when boiled in plain watery solution. Three drops of a 5 per cent. solution of the hydrochloride of tropacocaine instilled into the conjunctival sac produce anaesthesia in the same time as a like preparation of cocaine, enabling foreign bodies to be removed without pain, and a great advantage is that the pupil is not dilated, so that the patient is not troubled by double vision. Like cocaine, it appears to contract dilated blood vessels. I have seen $\frac{1}{4}$ grain of the hydrochloride injected into the great toe of a girl of 13 with success, and without any disagreeable after-effects. Probably in spinal anaesthesia it might be used with safety. For many reasons it is worthy of more extended trial than has been given it in the British Isles. Merck's price for the hydrochloride is half a crown a gram (15.432 grains), but if it came into common use the price would no doubt be much less.

CREMATION.

M.D., F.F.P. AND S.GLASG. writes: Adverting to your article on cremation, nobody can deny that our present burial methods are the most unhealthy and revolting ever known to any people. You will remember that in a case of exhumation by Sir Thomas Stevenson lately, he found that two years after interment putrefaction was still active and intolerable. You have rightly pointed out that the opposition of the Catholic Church to the practice of cremation is an important factor which ought to be modified, if possible. As bearing on the subject it may be well to record the following excerpt from the *Catholic Times* of the current issue: "In conclusion, it must be remembered that there is nothing directly opposed to any dogma of the Church in the practice of cremation, and that, if ever the leaders of this sinister movement so far control the governments of the world as to make this custom universal, it would not be a lapse in the faith confided to her were she obliged to conform." This statement is the more important as being that of a writer in the *Catholic Encyclopaedia*. It is a matter of grave moment that the Church authorities be approached in the appropriate fashion. I would suggest that each Division of the British Medical Association should approach the bishop of the diocese with a statement of the great dangers to health caused in crowded communities by the present burial system—together with their views as to the sanitary value of cremation. It might also be pointed out that the ashes of the cremated could be preserved in the churches.

CAUSES OR CONSEQUENCES.

DR. ROBERT LEE (Pwllheli) writes: A few months ago I was consulted in a case that was diagnosed as "tuberculous meningitis." The infant was between 5 and 6 months old. The prognosis of the practitioner, a man of some experience and knowledge, was very unfavourable, and the family distress was great, as it was the first child. The usual symptoms were present—a condition of nervous prostration, semi-coma, the skin pallid, the eyes turned up and the left markedly inverted, the hands and legs slightly tremulous. I advised the old-fashioned treatment of a hot bath, large doses of calomel and small doses of Dover's powder, and cold applications to the head. My friend the practitioner smiled good temperedly at what seemed rather absurd treatment and the folly of holding out any hope in such a case. Experience had taught me a good deal, and how very theoretical this tuberculous idea is in actual clinical work. Gradually the infant improved. In a week's time the brain inflammation subsided and things looked very different. In three weeks it was out of all danger and now is in perfect health. These forms of inflammation, which I see that Dr. Fisher and Dr. Card do not feel disposed to admit are tuberculous, are frequent in infants and children. The skin, the glands, the mucous membranes, the eyes, the ears, the joints, in fact all the tissues of the body in children, are liable to them, and they seem not to be caused by, or to be the consequence of, tuberculous infection. They do assume often a form of low and chronic character that led to such terms as the "King's evil," and scrofula. They look as if they are due to the constitutional conditions of the children, and are the consequences of any causes which lower their vitality and power of resisting the numerous agents that will attack the feeble and unhealthy.

A SANATORIUM CHART.

MESSRS. BALE, SONS, AND DANIELSSON have published a chart for use in sanatoriums for consumptives which has the advantage of showing on a single sheet the records of temperature, pulse, respiration, weight, results of examination of sputum and blood, and the amount of rest and exercise for a period of three months. Though the temperature chart has, of necessity, to be closely ruled in order to get the thirteen weeks into a reasonable compass, it is clear and distinct. There is adequate space for all the other particulars of the case, including a weekly summary of progress. This sanatorium chart should prove of value.

THE COLD BATH TREATMENT OF TYPHOID FEVER.

DR. JOHN HADDON (Hawick) writes: Dr. A. J. Manasseh, in the JOURNAL of February 27th, p. 569, tells us that he has not tried the cold bath treatment of typhoid fever, but has found that cold sponging is efficacious. I tried the cold bath when it was first recommended by the Germans, troublesome as it was, and found that it did more harm than good; but, as if by accident, I discovered that the sudden shock of cold water thrown upon the patient had an excellent effect. On looking into the literature on the subject, I found that Dr. Currie, an Edinburgh graduate, who practised in Liverpool in the beginning of 1800, advocated cold effusion in the treatment of scarlet fever, and I found it more successful than any other treatment and well deserving to be resuscitated in the treatment of fevers generally. The shock to the nervous system which the cold water gives seems to stimulate some centre which is at fault when fever exists. It certainly does not act by cooling the body, as the cold bath was recommended to do, and as, I suppose, sponging is supposed to do.

MEDICAL FOOTBALL.

FOOTBALL has been suspended again almost entirely during the last week owing to frost and snow, and the match between Middlesex and St. Thomas's Hospital in the Cup Tie has been postponed. The only game of importance has been that of the London Hospital *v.* Harlequins, played in a blinding snow storm at Hale End on February 27th, and resulting in a win for the Hospital by a goal and try to nothing. Some of the credit in the victory to the London was lost owing to the fact that the absence of four of the regular players for the Harlequins necessitated a rearrangement of the back division. The Hospital, however, thoroughly deserved its victory, playing in fine form and passing and running very cleverly. The chief credit was due to Heale and Lindsay, who again and again saved almost certain tries by the spirited defence with which they prevented the attacks of the Harlequin forwards. Starting with the wind in their favour, the Hospital kept their opponents almost continuously on the defensive, and for minutes at a time there were successions of "scrums" almost on the Harlequin's lines, but by half-time there had been no scoring. Within eight minutes after play was resumed, however, a bout of clever passing resulted in Palmer getting over the line by the corner. Then the Harlequins began to press, and the London had hard work defending until a smart kick by Lindsay gave Lloyd the looked-for opportunity and enabled him to touch down. The try was converted. The outstanding feature of the closing minutes was the series of brilliant but abortive runs by Lambert for the Harlequins.

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